nutrients

MDPI

Article

Effectors of Pregorexia and Emesis among Pregnant Women: A Pilot Study

Alexandros Gerontidis [1,†], Maria G. Grammatikopoulou [2,*,†], Christos Tzimos [3], Konstantinos Gkiouras [2], Eleftheria Taousani [4,5], Loukas Athanasiadis [6] and Dimitrios G. Goulis [5,*]

1 Department of Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, GR-56429 Thessaloniki, Greece
2 Department of Rheumatology and Clinical Immunology, Faculty of Medicine, School of Health Sciences, University of Thessaly, Biopolis, GR-41110 Larissa, Greece
3 Northern Greece Statistics Directorate, Hellenic Statistical Authority, 218 Delfon Str., GR-54646 Thessaloniki, Greece
4 Department of Midwifery, Faculty of Health Sciences, International Hellenic University, Alexander Campus, GR-57400 Thessaloniki, Greece
5 Unit of Reproductive Endocrinology, 1st Department of Obstetrics and Gynecology, Medical School, Faculty of Health Sciences, Aristotle University of Thessaloniki, 76 Agiou Pavlou Street, GR-54629 Thessaloniki, Greece
6 3rd Department of Psychiatry, Medical School, Aristotle University of Thessaloniki, 76 Agiou Pavlou Street, GR-54629 Thessaloniki, Greece
* Correspondence: mgrammat@uth.gr (M.G.G.); dgg@auth.gr (D.G.G.)
† These authors contributed equally to this work.

Abstract: During pregnancy, women tend to improve their lifestyle habits and refine their dietary intake. Quite often, however, these dietary improvements take an unhealthy turn, with orthorexia nervosa (ON) practices being apparent. The aim of the present pilot cross-sectional study was to assess the prevalence of ON tendencies and the incidence of pica and record diet practices in a sample of pregnant women. A total of 157 pregnant women were recruited through private practice gynecologists during the first months of 2021. Nutrition-related practices were recorded, orthorexic tendencies were assessed using the translated and culturally adapted Greek version of the ORTO-15 questionnaire, pica practices were evaluated with a binary question and nausea and emesis during pregnancy (NVP) was evaluated using the translated modified Pregnancy—Unique Quantification of Emesis and Nausea (mPUQE). Only two women reported pica tendencies, with ice and snow being the consumed items. The majority (61.1%) of women reported improving their diet since conception was achieved. Folic acid and iron oral nutrient supplements (ONS) were reportedly consumed by the majority of participants (87.9% and 72.6%, respectively) and 9.6% reported using herbal medicine products. The ORTO-15 score was reduced with tertiary education attainment, ART conception, being in the third trimester of pregnancy, consumption of folic acid and MV supplements and was only increased among women who were at their first pregnancy. The majority of participants experienced severe NVP and the remaining experienced moderate NVP. NVP was associated with lower hemoglobin levels, lack of supplementary iron intake, avoidance of gluten-containing foods, as well as with increased gestational weight gain. The results highlight the need to screen pregnant women for disturbed eating behaviors and nutrition-related problems, in order to ensure a healthy pregnancy outcome.

Keywords: orthorexia; disordered eating; pica; emesis; hyperemesis; nausea; eating disorder; gluten-free diet; vegetarianism; herbal medicine; maternal obesity

Citation: Gerontidis, A.; Grammatikopoulou, M.G.; Tzimos, C.; Gkiouras, K.; Taousani, E.; Athanasiadis, L.; Goulis, D.G. Effectors of Pregorexia and Emesis among Pregnant Women: A Pilot Study. *Nutrients* **2022**, *14*, 5275. https://doi.org/10.3390/nu14245275

Academic Editor: Linglin Xie

Received: 31 October 2022
Accepted: 7 December 2022
Published: 10 December 2022

1. Introduction

Pregnancy is a critical period in a woman's life, where attaining good health is of outmost importance for both the mother and the fetus. During this time, mothers-to-be are inclined to improve their lifestyle habits by quitting smoking [1] and refining their dietary

intake [2–4]. The notable improvement in lifestyle behavior taking place during gestation is, in fact, explained by the psychological theory [5]. Gestational maternal behavioral change is propelled by the motivation to improve lifestyle that is innately driven in the mothers and facilitated by community expectations, and additionally triggered by the development of the close maternal–fetal bond [6].

It has been suggested, however, that this motivation and effort to improve health and pregnancy outcomes can often reach unhealthy levels [7]. With obvious and salient changes in body shape taking place, alongside modifications in eating patterns, the gestational period often triggers, or aggravates symptoms of disordered eating [7]. Subsequently, the prevalence of eating disorders (EDs) during pregnancy has been estimated to reach 7.5% [8], although empirical evidence indicates that atypical EDs, including other specified feeding and EDs (OSFEDs) and unspecified feeding and EDs (USFED), appear to be more prevalent, though currently under-researched in the scientific literature [9–11].

Pregnant women with EDs often experience a variety of comorbidities, including binge eating, depression and anxiety, and excessive concern regarding gestational weight gain (GWG) [9]. A trio of causes have been identified as trigger factors for the development of EDs, OSFEDs and USFED during pregnancy, namely, (i) greater appetite levels, (ii) the need to improve lifestyle, including the adoption of a healthier diet and (iii) the body dissatisfaction associated with GWG [12]. When encountered during pregnancy and depending on their severity, EDs are associated with a variety of adverse events, including hyperemesis, vomiting, anemia and bleeding, impaired hydration status, sharp fluid and electrolyte shifts and an overall reduction in plasma volume, all of which can multiply the risk of maternal, obstetrical and fetal complications [13,14].

According to research, high levels of information and motivation about adhering to healthy eating patterns often propel the development of orthorexic tendencies during pregnancy [15]. Orthorexia nervosa (ON) is an OSFED characterized by a strong, unhealthy preoccupation for healthy "clean" eating [16], associated with perfectionism [17] and body-image dissatisfaction [18], the adoption of restrictive diets and inadequate intake of several micronutrients, leading to malnutrition and excessive fatigue [19,20]. When encountered during pregnancy, it is often termed as "pregorexia". Pregnant women in particular, are eager to improve their lifestyle in a pursuit of better maternal, obstetrical and fetal outcomes. Thus, they appear prone to the development of ON tendencies, while, on the other hand, healthcare professionals and gynecologists are often underinformed and confused regarding ON symptoms, signs and prevalence [21].

In parallel, pica, the persistent consumption of non-nutritive substances [22], is also encountered frequently in pregnancy [12]. Pica is a paraphrase of the word "magpie," a bird known for its unusual eating behaviors, eating almost anything available [23]. In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [24], it is classified as an USFED. Hippocrates was the first to describe pica in pregnancy as follows: "If a pregnant woman wants to eat earth or charcoal, and eats it, the infant will show signs of those things on its head" [25]. Apart from humans, however, pica practices are also widespread in the animal kingdom [26], suggesting an etiology-driven evolutionary adaptation, possibly stemming from nutritional causes. Proposed explanations for pica practices during gestation include the elevated maternal psychological stress, increased appetite and hunger, cultural expectations, dyspepsia, underlying micronutrient deficiencies—iron in particular—and protection against toxins and pathogens [27]. The prevalence of pica practices during pregnancy varies greatly in the literature, although the lack of a specific tool to diagnose the behavior is evident [12].

The aim of the present pilot cross-sectional study was to assess the prevalence of ON tendencies, the incidence of pica and record diet practices in a sample of pregnant women.

2. Materials and Methods

2.1. Population

A total of 157 adult pregnant women were recruited through private practice gynecologists during the first months of the year 2021. Inclusion criteria involved (1) adult women, (2) at clinical pregnancy, (3) communicating effortlessly in the Greek language without requiring translators, (4) with willingness to participate.

Exclusion criteria involved (1) adolescent pregnant women, (2) with chemical pregnancy not verified via ultrasound, (3) experiencing difficulties in understanding the Greek language, (4) not willing to participate in the study. No criterion was set regarding possible comorbidities of participants. Table 1 details the characteristics of the study's sample.

Table 1. Characteristics of the participating women (mean ± SD or *n* and %) (N = 157).

Age (years)	32.7 ± 5.8
BMI at the beginning of gestation (kg/m^2)	23.8 ± 4.1
GWG (kg)	7.8 ± 6.2
MUAC (cm)	27.6 ± 5.9
Nationality (Greek/Other) (*n*, %)	154 (*98.1%*)/3 (*1.9%*)
Ethnic minority (Latina/Chinese/African American/Roma) (*n*, %)	3 (*1.9%*)/1 (*0.6%*)/2 (*1.3%*)/1 (0.6%)
Level of educational attainment (secondary/tertiary/postgraduate) (*n*, %)	13 (*19.7%*)/84 (*53.5%*)/42 (*26.8%*)
Annual income per capita ≤5000/5001–10,000/10,000–15,000/>15,000 (EUR)	30 (*19.1%*)/48 (*30.6%*)/28 (*17.8%*)/20 (*12.7%*)
Family status (single/married/in a relationship/divorced) (*n*, %)	4 (*2.5%*)/141 (*89.8%*)/10 (*6.4%*)/1 (*0.6%*)
Trimester of gestation (1st/2nd/3rd) (*n*, %)	15 (*9.6%*)/65 (*41.1%*)/77 (*49%*)
Natural conception/ART	148 (*94.3%*)/9 (*5.7%*)
Single/twin/triple pregnancy (*n*, %)	148 (*94.3%*)/8 (*5.1%*)/1 (*0.6%*)
Parity (1st/2nd/3rd/4th/5th) (*n*, %)	91 (*58%*)/42 (*26.8%*)/17 (*10.8%*)/3 (*1.9%*)/4 (*2.5%*)

ART—assisted reproduction technology; BMI—body mass index; GWG—gestational weight gain; MUAC—middle upper-arm circumference.

2.2. Ethics

The study's protocol was approved by the Ethics Committee, Aristotle University of Thessaloniki's Medical School (approval ID 2.332/24-11-2020). Every woman was adequately informed of the study's aim before providing informed consent and participating in the research.

2.3. Instruments

2.3.1. Evaluation of ON

Orthorexic tendencies were assessed using the Greek version of the ORTO-15 questionnaire [28,29]. The tool consists of 15 questions recording the frequency of orthorexia-related behaviors, with possible answers provided in a Likert scale. Although previous research has used the total ORTO-15 score in a scale format with a cutoff for ON diagnosis, due to the lack of a tool based on the newly established ON criteria [20], the use of thresholds to diagnose ON has been deemed as "unsafe" [30]. Instead, results are presented in a scale format, as a continuous outcome describing the degree of ON tendencies, instead of utilizing a cutoff for diagnostic purposes [29].

2.3.2. Evaluation of Nausea and Vomiting during Pregnancy (NVP)

The severity of nausea and vomiting during pregnancy (NVP) was identified in the sample using the modified Pregnancy—Unique Quantification of Emesis and Nausea (mPUQE) [31]. The mPUQE is comprised of three questions in total, evaluating the frequency of NVP from the beginning of the pregnancy. Possible scores range between 3–15. Scores exceeding 13 points are indicative of severe NVP; mild NVP is diagnosed in women with mPUQE < 6; and participants with a score between 7–12 are considered as experiencing moderate NVP [31].

The mPUQE was translated and culturally adapted in the Greek language with permission from the authors [31], using the four-step forward–backward process, proposed by Guillemin et al. [32]. The reliability of the instrument was assessed with the Cronbach α for ordered variables [33].

2.3.3. Evaluation of Pica

Pica practices were evaluated using the following binary (yes/no) question: "Do you consume non-food items (sponge, rocks, ice, snow, earth, chalk, clothes, walls, etc.)?" In the case of a positive answer, the items consumed were also recorded.

2.3.4. Other Measures

Additional questions regarding the pregnancy (trimester, method of conception, etc.), comorbidities of the participating women, socio-economic status (SES), level of educational attainment, family status and typical questions regarding the participants' diet (intake of dietary supplements, etc.), were also recorded.

2.4. Statistical Analyses

Normality in the distribution of the variables was assessed through graphs and the Kolmogorov–Smirnoff test. Data are presented as means ± standard deviation (SD) (normally distributed data), or as medians and their respective inter-quartile ranges (IQR) for non-normally distributed data. Categorical values are presented as *n* and their respective %.

Univariate logistic regressions were performed to identify the association between ON tendencies and mPUQE (dependent variables) and each independent variable. For the multivariable (MV) models, only those variables with a p-value < 0.500 were included. Data were analyzed using the Jamovi project (version 1.2.27.0) [34] and PASW Statistics 21.0 (IBM SPSS Inc., Hong Kong).

3. Results

3.1. Nutrition Practices and Health Problems

Table 2 details the nutrition-related practices reported by the participants. Out of 157 women in total, only 2 women reported having pica tendencies, with ice and snow (whenever possible) being the consumed items.

Table 2. Nutrition-related practices of pregnant women (N = 157).

Nutrition Practices Followed by the Participants	Yes *n* (%)	No *n* (%)
Vegetarianism	5 (*3.2%*)	152 (*96.8%*)
Consumption of foods containing gluten	140 (*89.2%*)	17 (*10.8%*)
Consumption of eggs and by-products	146 (*93%*)	11 (*7%*)
Consumption of milk and dairy	150 (*95.5%*)	7 (*4.5%*)
Consumption of red meat	151 (*96.2%*)	6 (*3.8%*)
Consumption of fish, mollusks and crustaceans	127 (*80.9%*)	30 (*19.1%*)
Pica behavior	2 (*1.3%*)	155 (*98.7%*)
Intake of folic acid ONS	138 (*87.9%*)	19 (*12.1%*)
Intake of MV ONS	32 (*20.4%*)	125 (*79.6%*)
Intake of Fe ONS	114 (*72.6%*)	43 (*27.4%*)
Intake of vitamin D ONS	63 (*40.1%*)	94 (*59.9%*)
Improvement of diet since gestation was achieved	96 (*61.1%*)	61 (*38.9%*)
Intake of herbal medicine and herbal drinks	15 (*9.6%*)	142 (*90.4%*)
Intake of NNS	39 (*24.8%*)	118 (*75.2%*)

Fe—iron; MV—multivitamin; NNS—non-nutritive sweeteners; ONS—oral nutrient supplements.

The majority (61.1%) of women reported improving their diet since conception was achieved. Folic acid and iron oral nutrient supplements (ONS) were consumed by the vast majority of participants (87.9% and 72.6%, respectively). Most women were avoiding herbal medicine, herbal drinks and the intake of non-nutritive sweeteners (NNS, including stevia, aspartame, etc.) Only 3.2% of the mothers-to-be reported being vegetarians and 10.8% were avoiding gluten-containing products.

Severe NVP was diagnosed in 101 participants, with the remaining having moderate NVP. The Cronbach α coefficient for the mPUQE was moderate (0.587). Supplementary Figure S1 presents the translated mPUQE scale in the Greek language.

Apart from pregnancy-related health issues, 1.3% of the women were diagnosed with type 2 diabetes mellitus and an additional 1.3% had hypertensive disorders of pregnancy. Gestational diabetes mellitus (GDM) was apparent in 5.7% of the sample, 19.7% reported experiencing constipation during pregnancy, while 12.1%suffered from hemorrhoids.

3.2. Factors Associated with ON Tendencies

Table 3 presents the univariable and multivariable models explaining ORTO-15 in the sample. In the univariable model, increased orthorexic tendencies were associated with a lower educational level, first parity, natural conception, being in the initial stages of the pregnancy (first or second trimester), avoidance of gluten products, fish, mollusks and crustaceans and lack of ONS supplementation with folic acid or multivitamin products (Table 3). In the multivariable model, ON tendencies were reduced with tertiary education, assisted reproduction technology (ART) conception, being in the last gestational trimester, consuming folic acid and MV supplements. In the multivariable model, ON tendencies were only increased among women who were experiencing their first pregnancy.

Table 3. Univariable and multivariable logistic regression models explaining ORTO-15.

Variables	Univariable				Multivariable			
	β	*p*	95% CI		β	*p*	95% CI	
			Lower	Upper			Lower	Upper
Tertiary education	−1.255	0.032	−2.403	−0.107	−1.321	0.015	−2.377	−0.266
First parity	1.533	0.010	0.379	2.687	1.234	0.026	0.151	2.318
Number of embryos	−0.394	0.719	−2.553	1.765				
Hb levels	0.026	0.65	−0.087	0.139				
ART conception	−3.056	0.015	−5.508	−0.605	−2.59	0.028	−4.891	−0.288
Third trimester of gestation	−1.279	0.029	−2.423	−0.135	−1.344	0.013	−2.396	−0.292
mPUQE score	0.292	0.262	−0.222	0.806				
MUAC	0.002	0.575	−0.004	0.007				
Intake of products containing gluten	−1.761	0.062	−3.609	0.088	−0.80	0.376	−2.58	0.98
Intake of folic acid ONS	−2.670	0.003	−4.400	−0.940	−2.763	0.001	−4.368	−1.158
Intake of MV ONS	−1.630	0.025	−3.049	−0.211	−1.83	0.006	−3.129	−0.531
Intake of Fe ONS	−0.399	0.546	−1.700	0.903				
Intake of herbal medicine/drinks	−0.606	0.545	−2.580	1.368				
Vegetarianism	0.054	0.974	−3.255	3.363				

ART—assisted reproduction technology; CI: Confidence intervals; Hb: hemoglobin levels; MUAC—middle upper-arm circumference; MV—multivitamin; mPUQE—modified Pregnancy—Unique Quantification of Emesis and Nausea [31]; ONS—oral nutrient supplementation; ORTO-15—orthorexia nervosa 15-item questionnaire [28,29].

3.3. Factors associated with NVP

Table 4 details the regression analysis with mPUQE as the independent variable. In the univariable model, only low hemoglobin levels were associated with NVP. On the other hand, in the multivariable model, greater NVP was explained by lower hemoglobin levels, lack of iron ONS intake, avoidance of gluten-containing foods, as well as increased GWG.

Table 4. Univariable and multivariable logistic regression models explaining mPUQE.

Variables	Univariate				Multivariable			
			95% CI				95% CI	
	β	*p*	Lower	Upper	β	*p*	Lower	Upper
Tertiary education	0.018	0.966	−0.791	0.826				
First Parity	0.211	0.535	−0.463	0.884				
Hb levels	−0.049	0.027	−0.093	−0.006	−0.035	0.096	−0.077	0.006
ART conception	0.146	0.808	−1.041	1.334				
Second trimester of gestation	0.643	0.261	−0.489	1.775	0.301	0.328	−0.309	0.912
Intake of products containing gluten	−0.749	0.116	−1.687	0.19	−0.877	0.039	−1.708	−0.046
Folic acid ONS	−0.053	0.912	−1.018	0.911				
Fe ONS	−0.67	0.119	−1.517	0.177	−0.709	0.071	−1.481	0.062
Intake of herbal medicine/drinks	0.487	0.342	−0.53	1.504	0.468	0.324	−0.471	1.408
Vegetarianism	0.39	0.551	−0.903	1.683				
Pica practices	−0.305	0.857	−3.676	3.066				
GWG	0.053	0.151	−0.02	0.126	0.057	0.023	0.008	0.105
Has improved diet during pregnancy	0.003	0.992	−0.576	0.581				

ART—assisted reproduction technology; CI—confidence intervals; Fe—iron; GWG—gestational weight gain; Hb—hemoglobin levels; mPUQE—modified Pregnancy—Unique Quantification of Emesis and Nausea [31]; ONS—oral nutrient supplementation.

4. Discussion

The present study reveals that the majority of pregnant women reported improving their diet since conception was confirmed. In this manner, they often exhibit ON tendencies, with tertiary education, ART conception, being in the third trimester of pregnancy, consuming folic acid and MV supplements reducing ON tendencies and being pregnant for the first time increasing ON practices. As for pica, the prevalence among participants herein was very small. In parallel, the majority of pregnant women appear to experience severe NVP, which was associated with lower hemoglobin levels, lack of iron ONS intake, avoidance of food products containing gluten, as well as increased GWG.

Pregnancy is a critical and nutritionally demanding time period for women, where the health of the fetus and a favorable pregnancy outcome are of utmost importance. In an effort to ensure a healthy pregnancy, women tend to improve their diet quality [2,35,36] in parallel with their nutrient intake, via the consumption of ONS [3,37,38]. This phenomenon is due to the fact that many pregnancies are not planned in advance; thus, quite often, an effort to compensate for previously unhealthy eating habits emerges post-pregnancy confirmation [2]. Despite the observed improvements in dietary intake, however, most women still follow a diet of suboptimal quality [3,39–41]. In the present sample, the majority of pregnant women admitted to improving in their diet since conception was confirmed. In parallel, nearly all participants reported consuming ONS, and in particular folic acid and iron. This is in agreement with a previous study conducted in Greece, which also revealed that the majority of pregnant women consumed ONS [3]. Herein, most women were avoiding herbal medicine, herbal drinks and the intake of NNS, in accordance with the clinical practice guidelines for an optimum pregnancy [42]. Only 3.2% of the participants reported being vegetarians and 10.8% were avoiding gluten products. According to a recent systematic review, meat avoidance often falls within the disordered eating spectrum [43] and vegetarianism may be associated with ED pathology and affective status [44]. Similarly, the avoidance of gluten-containing foods in lack of celiac disease diagnosis is frequently an underlying ED in disguise (Avoidant/Restrictive Food Intake Disorder, ARFID) [45] and does not come without adverse events [46].

Nonetheless, the tendency to improve maternal diet during gestation often reaches unhealthy levels [12]. In the present sample, ON tendencies were apparent, and this behavior was heightened among women who were pregnant for the first time. On the other hand, tertiary education attainment, ART conception, being in the third trimester of pregnancy, consuming folic acid and MV supplements appeared to reduce ON tendencies. According to Zeeni [47], during pregnancy, social media use and increased dependence on technological devices are associated with body-image dissatisfaction and appearance

comparison, which could, in turn, propel ON tendencies. In a Turkish sample of childbearing women [15], higher levels of nutritional information and motivation were related to an obsession for "healthy eating", propelling ON tendencies. According to research, ON can be quite restrictive, with patients often omitting specific "unhealthy" food groups from their diets, leading to nutritional deficiencies and medical complications [48,49]. Research on EDs during pregnancy noted that women with previous history of EDs were more likely to be vegetarian and follow a diet of good quality [50]. Unfortunately, a limited number of studies have been conducted to date assessing the ON tendencies during gestation, suggesting that the overall prevalence is approximately 26.6% [15]. However, it appears that ON often goes underdiagnosed in pregnancy, with gynecologists failing to assess symptoms and signs. Furthermore, ON tendencies appear to continue even post-partum [51], in a possible attempt at timely reduction of GWG.

As for pica, a very small proportion of participants herein reported eating ice and snow. Pagophagia (ice and freezer frost) is a common non-food item consumed during pica [12]. Research indicates that the prevalence of gestational pica is greatly dependent on the region studied, with a relatively low prevalence among Western societies (8.3%) and a greater one among pregnant women residing in less industrialized countries [12,52–54]. According to a meta-analysis [55], a pooled estimate of 27.8% of pregnant women experience pica. This is because, in some parts of the world, it is culturally accepted to consume non-nutritive substances [56]. Depending on the consumed substance, pica may result in fetal toxicity, long-term neurological disabilities for the newborn [57,58] as well as in maternal and perinatal mortality [59]. Furthermore, research is unanimous on the association between pica and low iron stores, or iron-deficiency anemia (IDA) [27,60,61], although such data were not available herein and the number of participants with pica did not allow for further statistical comparisons. Nonetheless, pica usually manifests as gastrointestinal distress, abdominal pain, gastritis, esophagitis, nausea and IDA [60,61]. Intervention studies suggest that iron infusion received parenterally can acutely resolve all cravings for non-food items, suggesting that low iron levels might in fact, be the triggering factor behind these cravings [12,61].

With regard to NVP, in the present sample, it was associated with lower hemoglobin levels, lack of iron ONS intake, avoidance of foods containing gluten, as well as with increased GWG. Due to the cross-sectional nature of the study, however, we cannot conclude if the observed effects are coincidental or have a cause–effect relationship. Nevertheless, NVP is associated with an increased psychological burden and consists of an important effector of quality of life, particularly during the first trimester of pregnancy [62]. Previous research has associated NVP with younger maternal age [63], primigravidas, lower level of attained education, maternal obesity [64], multiple gestation [65], low income levels and part-time employment status [66]. Across the literature, increased GWG and obesity in particular appear to be unanimous findings associated with NVP severity [63,67]. Furthermore, changes in the levels of adipocytokines have also been related to the physiological changes associated with NVP [68]. With regard to dietary intake, the Norwegian Mother and Child Cohort Study [63] associated NVP severity with greater carbohydrate intake; thus, the recorded avoidance of gluten in the present study might in fact be the correcting regime to reduce NVP severity among participating women. In parallel, discontinuation of iron supplementation was shown to reduce NVP symptoms [69]. Thus, the observed low Fe ONS intake herein associated with NVP might in fact consist of the method used by pregnant women to tamper down NVP symptoms. Nausea and vomiting are often worse in pregnant women with elevated human chorionic gonadotropin (hCG) levels, as seen in multiple gestations [70], and a plethora of research items concluded on the existence of a link between changes in hCG concentrations and NVP [71–73]. Previous research [74] has suggested that during pregnancy, women with atypical EDs exhibit greater odds of NVP.

An additional interesting finding of the present study involves the intake of herbal medicine and herbal drinks by pregnant women. A total of 9.6% of participants reported consuming such supplements during gestation. Research conducted in other areas of the world provided greater estimates, with 52% of Australian [75] and of 57.8% of U.K. pregnant

women [76] reportedly using herbal medicine products. It is believed that herbal medicine products are safer than conventional medicine, and in many cultures, they are traditionally used to treat pregnancy complications, including NVP [77,78]. Furthermore, as they are often considered as "natural" and "safe" alternatives to conventional medicine, their use is frequently not reported to gynecologists and healthcare professionals [77], who, for their part, often neglect to ask about the use of such substances. Although some herbal medicine products may be safe for the mothers, not all are considered to be safe for the fetuses [79], while various adverse events have been associated with their use [42,77,80,81]. The obvious lack of knowledge on potential toxicity, paired with the possibility of interaction with other, more conventional treatments, can be harmful for both the mother and the child [77]. In this manner, it becomes obvious that educating pregnant women on the use of herbal medicine is important, whereas, in parallel, recording the use of herbal medicine products is also a pivotal issue from the health professional's perspective [42,77,81].

Methodological limitations of the present study include the rather small sample size and the cross-sectional design. Furthermore, due to the nature of the ORTO-15, we could not assess the prevalence of ON in the sample. Nonetheless, the recent publication of the consensus on ON definition [20] is expected to aid the development of ON-specific tools, based on the suggested ON symptomatology. With regard to the mPUQE, a moderate Cronbach α was calculated for the tool, as a possible result of the small number of participants who answered positively in the three mPUQE questions. Last, but not least, the lack of a tool to diagnose pica is apparent in the literature; thus, we opted for the use of a binary question, as seen in previous research.

Undeniably, the prevalence of EDs, OSFED and USFED in pregnancy is a broad topic of varying grades of severity, with potentially threatening consequences for the fetus, including high APGAR scores, a greater risk for intra-uterine growth retardation (IUGR) and smaller head circumference, microcephaly, low birth weight and perinatal mortality [12,82–84]. When EDs, OSFED and USFED are diagnosed throughout gestation, a multidisciplinary treatment approach must be offered, focusing on the intake of adequate energy and nutrients, achieving appropriate GWG and improving pregnancy outcomes [12,85].

5. Conclusions

Pregnancy consists of an opportunity for intervention, improving lifestyle, developing long-term healthy eating habits and accepting physiological changes in body image [85,86]. As a result, many pregnant women improve their diet compared to pre-conception, while many also resort to ONS in order to increase selected micronutrient intake. This lifestyle improvement effort, however, frequently takes an unhealthy turn, with ON practices being apparent. The observed changes in body weight during pregnancy appears to trigger subsequent changes in the attitudes and behaviors related to eating [87]. In parallel, other USFED, including pica, may also appear during the gestational period, warranting further attention. Although the requirement to screen pregnant women for the detection of disturbed eating behaviors is of great importance and is highlighted in the literature, it is rarely the case in everyday clinical practice [85]. Clinical algorithms for the management of EDs are required [12,88] to aid gynecologists and health professionals in identifying women at risk of developing EDs and ensuring an optimal pregnancy outcome.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/nu14245275/s1, Figure S1: Translation of the mPUQE in the Greek language.

Author Contributions: Conceptualization, M.G.G. and D.G.G.; methodology, M.G.G., D.G.G., K.G., C.T. and L.A.; formal analysis, C.T., M.G.G. and K.G.; investigation, A.G., E.T. and M.G.G.; resources, D.G.G.; data curation, A.G., E.T., C.T., K.G. and M.G.G.; writing—original draft preparation, A.G., M.G.G., D.G.G., C.T. and K.G.; writing—review and editing, D.G.G., M.G.G. and L.A.; supervision, D.G.G., L.A. and M.G.G.; project administration, D.G.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee) of the Medical School, situated at Aristotle University of Thessaloniki (approval ID 2.332/24-11-2020).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: All data are available upon request to the corresponding authors.

Conflicts of Interest: The authors declare no conflict of interest. Parts of the present study were presented at the 11th Scientific Congress of the Department of Medicine, Aristotle University of Thessaloniki, in March 2022.

References

1. Tong, V.T.; Jones, J.R.; Dietz, P.M.; D'Angelo, D.; Bombard, J.M.; Centers for Disease Control and Prevention (CDC). Trends in smoking before, during, and after pregnancy—Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 31 sites, 2000–2005. *Morb. Mortal. Wkly. Rep. Surveill. Summ.* **2009**, *58*, 1–31.
2. Tsigga, M.; Filis, V.; Hatzopoulou, K.; Kotzamanidis, C.; Grammatikopoulou, M.G. Healthy Eating Index during pregnancy according to pre-gravid and gravid weight status. *Public Health Nutr.* **2011**, *14*, 290–296. [CrossRef] [PubMed]
3. Hatzopoulou, K.; Filis, V.; Grammatikopoulou, M.G.; Kotzamanidis, C.; Tsigga, M. Greek Pregnant Women Demonstrate Inadequate Micronutrient Intake Despite Supplement Use. *J. Diet. Suppl.* **2014**, *11*, 155–165. [CrossRef] [PubMed]
4. Adewumi, O.; Knol, L. Pregnant Women have Higher Healthy Eating Index Scores than Women Living with or without Children in the US: NHANES 2011–2016. *J. Acad. Nutr. Diet.* **2021**, *121*, A95. [CrossRef]
5. Olander, E.K.; Smith, D.M.; Darwin, Z. Health behaviour and pregnancy: A time for change. *J. Reprod. Infant Psychol.* **2018**, *36*, 1–3. [CrossRef]
6. Bergh, B.V.d.; Simons, A. A review of scales to measure the mother–foetus relationship. *J. Reprod. Infant Psychol.* **2009**, *27*, 114–126. [CrossRef]
7. Sebastiani, G.; Andreu-Fernández, V.; Herranz Barbero, A.; Aldecoa-Bilbao, V.; Miracle, X.; Meler Barrabes, E.; Balada Ibañez, A.; Astals-Vizcaino, M.; Ferrero-Martínez, S.; Gómez-Roig, M.D.; et al. Eating Disorders During Gestation: Implications for Mother's Health, Fetal Outcomes, and Epigenetic Changes. *Front. Pediatr.* **2020**, *8*, 587. [CrossRef]
8. Easter, A.; Bye, A.; Taborelli, E.; Corfield, F.; Schmidt, U.; Treasure, J.; Micali, N. Recognising the symptoms: How common are eating disorders in pregnancy? *Eur. Eat. Disord. Rev.* **2013**, *21*, 340–344. [CrossRef]
9. Martínez-Olcina, M.; Rubio-Arias, J.A.; Reche-García, C.; Leyva-Vela, B.; Hernández-García, M.; Hernández-Morante, J.J.; Martínez-Rodríguez, A. Eating Disorders in Pregnant and Breastfeeding Women: A Systematic Review. *Medicina* **2020**, *56*, 352. [CrossRef]
10. Gerges, S.; Obeid, S.; Hallit, S. Initial psychometric properties of an Arabic version of the disordered eating attitudes in pregnancy scale (A-DEAPS) among Lebanese pregnant women. *J. Eat. Disord.* **2022**, *10*, 1–9. [CrossRef]
11. Saleem, T.; Saleem, S.; Shoib, S.; Shah, J.; Ali, S.A.e.Z. A rare phenomenon of pregorexia in Pakistani women: Need to understand the related behaviors. *J. Eat. Disord.* **2022**, *10*, 1–11. [CrossRef] [PubMed]
12. Grammatikopoulou, M.G.; Gkiouras, K.; Vassilakou, T.; Goulis, D.G. Eating Disorders During Pregnancy. In *Eating Disorders*; Springer International Publishing: Cham, Switzerland, 2022; pp. 1–12.
13. Burke, M.E.; Vangellow, J. Anorexia nervosa and bulimia nervosa: Chronic conditions affecting pregnancy. *Naacog's Clin. Issues Perinat. Women's Health Nurs.* **1990**, *1*, 240–254.
14. das Neves, M.d.C.; Teixeira, A.A.; Garcia, F.M.; Rennó, J.; da Silva, A.G.; Cantilino, A.; Rosa, C.E.; Mendes-Ribeiro, J.d.A.; Rocha, R.; Lobo, H.; et al. Eating disorders are associated with adverse obstetric and perinatal outcomes: A systematic review. *Braz. J. Psychiatry* **2021**, *44*, 201–214. [CrossRef] [PubMed]
15. Taştekin Ouyaba, A.; Çiçekoğlu Öztürk, P. The effect of the information-motivation-behavioral skills (IMB) model variables on orthorexia nervosa behaviors of pregnant women. *Eat. Weight Disord.* **2022**, *27*, 361–372. [CrossRef]
16. Grammatikopoulou, M.G.; Gkiouras, K.; Polychronidou, G.; Kaparounaki, C.; Gkouskou, K.K.; Magkos, F.; Donini, L.M.; Eliopoulos, A.G.; Goulis, D.G. Obsessed with Healthy Eating: A Systematic Review of Observational Studies Assessing Orthorexia Nervosa in Patients with Diabetes Mellitus. *Nutrients* **2021**, *13*, 3823. [CrossRef]
17. Barnes, M.A.; Caltabiano, M.L. The interrelationship between orthorexia nervosa, perfectionism, body image and attachment style. *Eat. Weight Disord.* **2017**, *22*, 177–184. [CrossRef]
18. He, J.; Zhao, Y.; Zhang, H.; Lin, Z. Orthorexia nervosa is associated with positive body image and life satisfaction in Chinese elderly: Evidence for a positive psychology perspective. *Int. J. Eat. Disord.* **2021**, *54*, 212–221. [CrossRef]
19. Douma, E.R.; Valente, M.; Syurina, E.V. Developmental pathway of orthorexia nervosa: Factors contributing to progression from healthy eating to excessive preoccupation with healthy eating. Experiences of Dutch health professionals. *Appetite* **2021**, *158*, 105008. [CrossRef]

20. Donini, L.M.; Ramón Barrada, J.; Barthels, F.; Dunn, T.M.; Babeau, C.; Brytek-Matera, A.; Cena, H.; Cerolini, S.; Cho, H.; Coimbra, M.; et al. A consensus document on definition and diagnostic criteria for orthorexia nervosa. *Eat. Weight. Disord.* **2022**, *1*, 1–17. [CrossRef]
21. Gramaglia, C.; Gattoni, E.; Ferrante, D.; Abbate-Daga, G.; Baldissera, E.; Calugi, S.; Cascino, G.; Castellini, G.; Collantoni, E.; Favaro, A.; et al. What do Italian healthcare professionals think about orthorexia nervosa? Results from a multicenter survey. *Eat. Weight Disord.* **2022**, *27*, 2037–2049. [CrossRef]
22. Mishori, R.; McHale, C. Pica: An age-old eating disorder that's often missed. *J. Fam. Pract.* **2014**, *63*, E1–E4. [PubMed]
23. Tewari, S.; Krishnan, V.H.R.; Valsalan, V.C.; Roy, A. Pica in a learning disability hospital: A clinical survey. *Br. J. Dev. Disabil.* **2014**, *41*, 13–22. [CrossRef]
24. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*; American Psychiatric Association: Washington, DC, USA, 2013; ISBN 0-89042-555-8.
25. Young, S.L. Appendix A: Notable Moments in the History of Pica. In *Craving Earth: Understanding Pica—the Urge to Eat Clay, Starch, Ice, and Chalk*; Columbia University Press: Chichester, NY, USA, 2016.
26. Krishnamani, R.; Mahaney, W.C. Geophagy among primates: Adaptive significance and ecological consequences. *Anim. Behav.* **2000**, *59*, 899–915. [CrossRef] [PubMed]
27. Young, S.L. Pica in pregnancy: New ideas about an old condition. *Annu. Rev. Nutr.* **2010**, *30*, 403–422. [CrossRef] [PubMed]
28. Donini, L.M.; Marsili, D.; Graziani, M.P.; Imbriale, M.; Cannella, C. Orthorexia nervosa: Validation of a diagnosis questionnaire. *Eat. Weight. Disord.* **2005**, *10*, e28–e32. [CrossRef]
29. Gkiouras, K.; Grammatikopoulou, M.G.; Tsaliki, T.; Ntwali, L.; Nigdelis, M.P.; Gerontidis, A.; Taousani, E.; Tzimos, C.; Rogoza, R.; Bogdanos, D.P.; et al. Orthorexia nervosa: Replication and validation of the ORTO questionnaires translated into Greek in a survey of 848 Greek individuals. *Hormones* **2022**, *21*, 251–260. [CrossRef]
30. Rogoza, R.; Donini, L.M. Introducing ORTO-R: A revision of ORTO-15: Based on the re-assessment of original data. *Eat. Weight Disord.* **2020**, *26*, 887–895. [CrossRef]
31. Lacasse, A.; Rey, E.; Ferreira, E.; Morin, C.; Bérard, A. Validity of a modified Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) scoring index to assess severity of nausea and vomiting of pregnancy. *Am. J. Obstet. Gynecol.* **2008**, *198*, e1–e71. [CrossRef]
32. Guillemin, F.; Bombardier, C.; Beaton, D. Cross-cultural adaptation of health-related quality of life measures: Literature review and proposed guidelines. *J. Clin. Epidemiol.* **1993**, *46*, 1417–1432. [CrossRef] [PubMed]
33. Cronbach, L.J. Coefficient alpha and the internal structure of tests. *Psychometrika* **1951**, *16*, 297–334. [CrossRef]
34. The Jamovi Project. Jamovi. 2020. Available online: https://www.jamovi.org/ (accessed on 9 December 2022).
35. Ainscough, K.M.; O'Brien, E.C.; Lindsay, K.L.; Kennelly, M.A.; O'Sullivan, E.J.; O'Brien, O.A.; McCarthy, M.; De Vito, G.; McAuliffe, F.M. Nutrition, Behavior Change and Physical Activity Outcomes From the PEARS RCT-An mHealth-Supported, Lifestyle Intervention Among Pregnant Women With Overweight and Obesity. *Front. Endocrinol.* **2020**, *10*, 938. [CrossRef] [PubMed]
36. Nana, A.; Zema, T. Dietary practices and associated factors during pregnancy in northwestern Ethiopia. *BMC Pregnancy Childbirth* **2018**, *18*, 183. [CrossRef] [PubMed]
37. de Boer, A.; Bast, A.; Godschalk, R. Dietary supplement intake during pregnancy; better safe than sorry? *Regul. Toxicol. Pharmacol.* **2018**, *95*, 442–447. [CrossRef]
38. Avram, C.; Bucur, O.M.; Zazgyva, A.; Avram, L.; Ruta, F. Vitamin Supplementation in Pre-Pregnancy and Pregnancy among Women—Effects and Influencing Factors in Romania. *Int. J. Environ. Res. Public Health* **2022**, *19*, 8503. [CrossRef] [PubMed]
39. Rojhani, A.; Ouyang, P.; Gullon-Rivera, A.; Dale, T.M. Dietary quality of pregnant women participating in the special supplemental nutrition program for women, infants, and children. *Int. J. Environ. Res. Public Health* **2021**, *18*, 8370. [CrossRef]
40. Deierlein, A.L.; Ghassabian, A.; Kahn, L.G.; Afanasyeva, Y.; Mehta-Lee, S.S.; Brubaker, S.G.; Trasande, L. Dietary Quality and Sociodemographic and Health Behavior Characteristics Among Pregnant Women Participating in the New York University Children's Health and Environment Study. *Front. Nutr.* **2021**, *8*, 639425. [CrossRef]
41. Schwedhelm, C.; Lipsky, L.M.; Temmen, C.D.; Nansel, T.R. Eating Patterns during Pregnancy and Postpartum and Their Association with Diet Quality and Energy Intake. *Nutrients* **2022**, *14*, 1167. [CrossRef]
42. Grammatikopoulou, M.G.; Theodoridis, X.; Gkiouras, K.; Lampropoulou, M.; Petalidou, A.; Patelida, M.; Tsirou, E.; Papoutsakis, C.; Goulis, D.G. Methodological quality of clinical practice guidelines for nutrition and weight gain during pregnancy: A systematic review. *Nutr. Rev.* **2020**, *78*, 546–562. [CrossRef]
43. McLean, C.P.; Kulkarni, J.; Sharp, G. Disordered eating and the meat-avoidance spectrum: A systematic review and clinical implications. *Eat. Weight Disord.* **2022**, *27*, 2347–2375. [CrossRef]
44. Paslakis, G.; Richardson, C.; Nöhre, M.; Brähler, E.; Holzapfel, C.; Hilbert, A.; de Zwaan, M. Prevalence and psychopathology of vegetarians and vegans—Results from a representative survey in Germany. *Sci. Rep.* **2020**, *10*, 1–10. [CrossRef]
45. Lerner, A.; O'Bryan, T.; Matthias, T. Navigating the Gluten-Free Boom: The Dark Side of Gluten Free Diet. *Front. Pediatr.* **2019**, *7*, 414. [CrossRef] [PubMed]
46. Aljada, B.; Zohni, A.; El-Matary, W. The Gluten-Free Diet for Celiac Disease and Beyond. *Nutrients* **2021**, *13*, 3993. [CrossRef] [PubMed]

47. Zeeni, N.; Abi Kharma, J.; Mattar, L. Social media use impacts body image and eating behavior in pregnant women. *Curr. Psychol.* **2021**, *40*, 1–8. [CrossRef]
48. Koven, N.S.; Wabry, A. The clinical basis of orthorexia nervosa: Emerging perspectives. *Neuropsychiatr. Dis. Treat.* **2015**, *11*, 385–394. [CrossRef] [PubMed]
49. Mitrofanova, E.; Mulrooney, H.; Petróczi, A. Assessing psychological and nutritional impact of suspected orthorexia nervosa: A cross-sectional pilot study. *J. Hum. Nutr. Diet.* **2021**, *34*, 42–53. [CrossRef]
50. Dörsam, A.F.; Preißl, H.; Micali, N.; Lörcher, S.B.; Zipfel, S.; Giel, K.E. The Impact of Maternal Eating Disorders on Dietary Intake and Eating Patterns during Pregnancy: A Systematic Review. *Nutrients* **2019**, *11*, 840. [CrossRef]
51. Ayhan Baser, D.; Cankurtaran, M. The Assessment of the Orthorexia Nervosa Tendencies among Postpartum Women. *Med. J.* **2021**, *13*, 218–225. [CrossRef]
52. Ezzeddin, N.; Zavoshy, R.; Noroozi, M.; Jahanihashemi, H.; Riseh, S.H. Prevalence and risk factors for pica during pregnancy in Tehran, Iran. *Eat. Weight Disord.* **2015**, *20*, 457–463. [CrossRef]
53. Francis, S.; Jagadeesh, N.S.; Singaravelu, R.; Subramaniam, A. The influence of pica practice on nutritional status, stress and anxiety of pregnant women. *Clin. Epidemiol. Glob. Health* **2022**, *17*, 101133. [CrossRef]
54. Konlan, K.D.; Abdulai, J.A.; Konlan, K.D.; Amoah, R.M.; Doat, A.-R. Practices of pica among pregnant women in a tertiary healthcare facility in Ghana. *Nurs. Open* **2020**, *7*, 783–792. [CrossRef]
55. Fawcett, E.J.; Fawcett, J.M.; Mazmanian, D. A meta-analysis of the worldwide prevalence of pica during pregnancy and the postpartum period. *Int. J. Gynecol. Obstet.* **2016**, *133*, 277–283. [CrossRef] [PubMed]
56. Nasser, Y.A.; Muco, E.; Alsaad, A.J. Pica. In: StatPearls. Treasure Island, Florida: StatPearls Publishing. Available online: https://pubmed.ncbi.nlm.nih.gov/30335275/ (accessed on 9 December 2022).
57. Mycyk, M.B.; Leikin, J.B. Combined Exchange Transfusion and Chelation Therapy for Neonatal Lead Poisoning. *Ann. Pharmacother.* **2004**, *38*, 821–824. [CrossRef] [PubMed]
58. Mireku, M.O.; Davidson, L.L.; Zoumenou, R.; Massougbodji, A.; Cot, M.; Bodeau-Livinec, F. Consequences of prenatal geophagy for maternal prenatal health, risk of childhood geophagy and child psychomotor development. *Trop. Med. Int. Health* **2018**, *23*, 841–849. [CrossRef] [PubMed]
59. Horner, R.D.; Lackey, C.J.; Kolasa, K.; Warren, K. Pica practices of pregnant women. *J. Am. Diet. Assoc.* **1991**, *91*, 34–38. [CrossRef] [PubMed]
60. Young, S.L.; Khalfan, S.S.; Farag, T.H.; Kavle, J.A.; Ali, S.M.; Hajji, H.; Rasmussen, K.M.; Pelto, G.H.; Tielsch, J.M.; Stoltzfus, R.J. Association of Pica with Anemia and Gastrointestinal Distress among Pregnant Women in Zanzibar, Tanzania. *Am. J. Trop. Med. Hyg.* **2010**, *83*, 144. [CrossRef]
61. Epler, K.E.; Pierce, A.; Rappaport, V.J. Pica in Pregnancy: An Unusual Presentation. *Obstet. Gynecol.* **2017**, *130*, 1377–1379. [CrossRef]
62. Heitmann, K.; Nordeng, H.; Havnen, G.C.; Solheimsnes, A.; Holst, L. The burden of nausea and vomiting during pregnancy: Severe impacts on quality of life, daily life functioning and willingness to become pregnant again—Results from a cross-sectional study. *BMC Pregnancy Childbirth* **2017**, *17*, 75. [CrossRef]
63. Chortatos, A.; Haugen, M.; Iversen, P.O.; Vikanes, Å.; Magnus, P.; Veierød, M.B. Nausea and vomiting in pregnancy: Associations with maternal gestational diet and lifestyle factors in the Norwegian Mother and Child Cohort Study. *BJOG An. Int. J. Obstet. Gynaecol.* **2013**, *120*, 1642–1653. [CrossRef]
64. Klebanoff, M.A.; Koslowe, P.A.; Kaslow, R.; Rhoads, G.G. Epidemiology of vomiting in early pregnancy. *Obstet. Gynecol.* **1985**, *66*, 612–616. [CrossRef]
65. Brandes, J.M. First-trimester nausea and vomiting as related to outcome of pregnancy. *Obstet. Gynecol.* **1967**, *30*, 427–431.
66. Lacroix, R.; Eason, E.; Melzack, R. Nausea and vomiting during pregnancy: A prospective study of its frequency, intensity, and patterns of change. *Am. J. Obstet. Gynecol.* **2000**, *182*, 931–937. [CrossRef]
67. Jenabi, E. The correlation of pregnancy complication and Body Mass Index. *Procedia Soc. Behav. Sci.* **2011**, *28*, 563–567. [CrossRef]
68. Jahani, F.; Khazaei, Z.; Moodi, M.; Zarban, A.; Salmani, F.; Tahergorabi, Z. The relation of visfatin with nausea and vomiting in the pregnancy. *J. Res. Med. Sci.* **2020**, *25*, 80.
69. Gill, S.K.; Maltepe, C.; Koren, G. The effectiveness of discontinuing iron-containing prenatal multivitamins on reducing the severity of nausea and vomiting of pregnancy. *J. Obstet. Gynaecol.* **2009**, *29*, 13–16. [CrossRef]
70. Lee, N.M.; Saha, S. Nausea and Vomiting of Pregnancy. *Gastroenterol. Clin. N. Am.* **2011**, *40*, 309–334. [CrossRef]
71. Davis, M. Nausea and vomiting of pregnancy: An evidence-based review. *J. Perinat. Neonatal Nurs.* **2004**, *18*, 312–328. [CrossRef]
72. Goodwin, T.M.; Montoro, M.; Mestman, J.H.; Pekary, A.E.; Hershman, J.M. The role of chorionic gonadotropin in transient hyperthyroidism of hyperemesis gravidarum. *J. Clin. Endocrinol. Metab.* **1992**, *75*, 1333–1337.
73. Masson, G.M.; Anthony, F.; Chau, E. Serum chorionic gonadotrophin (hCG), schwangerschaftsprotein 1 (SP1), progesterone and oestradiol levels in patients with nausea and vomiting in early pregnancy. *Br. J. Obstet. Gynaecol.* **1985**, *92*, 211–215. [CrossRef]
74. Torgersen, L.; Von Holle, A.; Reichborn-Kjennerud, T.; Berg, C.K.; Hamer, R.; Sullivan, P.; Bulik, C.M. Nausea and vomiting of pregnancy in women with bulimia nervosa and eating disorders not otherwise specified. *Int. J. Eat. Disord.* **2008**, *41*, 722–727. [CrossRef]

75. Frawley, J.; Adams, J.; Sibbritt, D.; Steel, A.; Broom, A.; Gallois, C. Prevalence and determinants of complementary and alternative medicine use during pregnancy: Results from a nationally representative sample of Australian pregnant women. *Aust. N. Z. J. Obstet. Gynaecol.* **2013**, *53*, 347–352. [CrossRef]
76. Holst, L.; Wright, D.; Haavik, S.; Nordeng, H. Safety and efficacy of herbal remedies in obstetrics-review and clinical implications. *Midwifery* **2011**, *27*, 80–86. [CrossRef] [PubMed]
77. Illamola, S.M.; Amaeze, O.U.; Krepkova, L.V.; Birnbaum, A.K.; Karanam, A.; Job, K.M.; Bortnikova, V.V.; Sherwin, C.M.T.; Enioutina, E.Y. Use of herbal medicine by pregnant women: What physicians need to know. *Front. Pharmacol.* **2019**, *10*, 1483. [CrossRef] [PubMed]
78. Jahan, S.; Mozumder, Z.M.; Shill, D.K. Use of herbal medicines during pregnancy in a group of Bangladeshi women. *Heliyon* **2022**, *8*, e08854. [CrossRef] [PubMed]
79. Facchinetti, F.; Pedrielli, G.; Benoni, G.; Joppi, M.; Verlato, G.; Dante, G.; Balduzzi, S.; Cuzzolin, L. Herbal supplements in pregnancy: Unexpected results from a multicentre study. *Hum. Reprod.* **2012**, *27*, 3161–3167. [CrossRef]
80. Procter, S.B.; Campbell, C.G. Position of the Academy of Nutrition and Dietetics: Nutrition and Lifestyle for a Healthy Pregnancy Outcome. *J. Acad. Nutr. Diet.* **2014**, *114*, 1099–1103. [CrossRef]
81. Sarecka-Hujar, B.; Szulc-Musioł, B. Herbal Medicines—Are They Effective and Safe during Pregnancy? *Pharmaceutics* **2022**, *14*, 171. [CrossRef]
82. Janas-Kozik, M.; Żmijowska, A.; Zasada, I.; Jelonek, I.; Cichoń, L.; Siwiec, A.; Wilczyński, K.M. Systematic Review of Literature on Eating Disorders During Pregnancy-Risk and Consequences for Mother and Child. *Front. Psychiatry* **2021**, *12*, 777529. [CrossRef] [PubMed]
83. Arnold, C.; Johnson, H.; Mahon, C.; Agius, M. The effects of eating disorders in pregnancy on mother and baby: A review. *Psychiatr. Danub.* **2019**, *31*, 615–618.
84. Watson, H.J.; Zerwas, S.; Torgersen, L.; Gustavson, K.; Diemer, E.W.; Knudsen, G.P.; Reichborn-Kjennerud, T.; Bulik, C.M. Maternal eating disorders and perinatal outcomes: A three-generation study in the Norwegian Mother and Child Cohort Study. *J. Abnorm. Psychol.* **2017**, *126*, 552–564. [CrossRef]
85. Morrill, E.S.; Nickols-Richardson, H.M. Bulimia Nervosa During Pregnancy: A Review. *J. Am. Diet. Assoc.* **2001**, *101*, 448–454. [CrossRef]
86. Fogarty, S.; Elmir, R.; Hay, P.; Schmied, V. The experience of women with an eating disorder in the perinatal period: A meta-ethnographic study. *BMC Pregnancy Childbirth* **2018**, *18*, 121. [CrossRef] [PubMed]
87. Dukay-Szabó, S.; Simon, D.; Varga, M.; Koller, O.; Pataki, Z.; Rigó, J.; Túry, F. The applicability of the Eating Disorder Inventory in pregnancy. *Eat. Weight Disord.* **2022**, *27*, 629–637. [CrossRef] [PubMed]
88. Paslakis, G.; de Zwaan, M. Clinical management of females seeking fertility treatment and of pregnant females with eating disorders. *Eur. Eat. Disord. Rev.* **2019**, *27*, 215–223. [CrossRef] [PubMed]