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Diet in pregnancy in the sixteenth and seventeenth centuries

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DIET IN PREGNANCY IN THE SIXTEENTH AND SEVENTEENTH CENTURIES

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DIET IN PREGNANCY IN THE SIXTEENTH AND SEVENTEENTH CENTURIES

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Section 1

THE PROBLEM

Today a woman's diet during pregnancy occupies an important position in what we consider to be good obstetrical management. Discussion of the amounts and kinds of foods to insure adequate protein, vitamin, and mineral intake generally take up a good part of one of the early prenatal visits with her obstetrician. The well-being of the gravida, which includes preventing anemia and decreasing the likelihood of toxemia,[1] and considerations of normal fetal growth and development underlie current dietary advice. These considerations include the weight of the fetus at term, which influences neonatal survival as well as growth and performance in the first year of life,[2] and long term effects on the central nervous system of fetal malnutrition.[3]

The obstetrician's advice, however, is founded on information that has emerged only in the last 100 to 150 years with discoveries of the caloric

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[1]"Nutrition in Pregnancy, "The Medical Letter on Drugs and Therapeutics, 15:67-68, August 3, 1973; see also "Nutrition and Pregnancy. An Invitational Symposium. I., The Journal of Reproductive Medicine, 7:199-219, November, 1971.

[2]Judith E. Singer, Milton Westphal, and Kenneth Niswander, "Relationship of Weight Gain During Pregnancy to Birth Weight and Infant Growth and Development in the First Year of Life," Obstetrics and Gynecology, 31:417-423. March, 1968.

[3]Myron Winick, "Fetal Malnutrition," Clinical Obstetrics and Gynecology, 13:526-541, September, 1970; see also Myron Winick, "Malnutrition and Brain Development," The Journal of Pediatrics,74:667-679, May, 1969; and Herbert G. Birch, "Functional Effects of Fetal Malnutrition," Hospital Practice, 6:134-148, March, 1971.

basis of nutrition, the metabolism of protein, vitamins, and minerals, and some of the effects produced by deficiencies of these substances. Before this time was diet during pregnancy an important consideration? If so, what were the goals of prenatal diet, and how were they accomplished?

In seeking answers to these questions, I have selected the sixteenth and seventeenth centuries as a suitable period for investigation. Before this time little on obstetrics was published; during this time, however, there emerged several books on midwifery and obstetrics that included discussions of prenatal diet.[4] This period also represented a time of little change in the notions of the role of diet in health, medical treatment, and pregnancy. The bulk of these ideas had come nearly unchanged from Hippocrates, Aristotle, and Galen.[5] A brief discussion of the relevant aspects of diet and nutrition in the medical practice of the sixteenth and seventeenth centuries will aid in understanding the role of diet during pregnancy.

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[4]Irving S. Cutter and Henry R. Viets, A Short History of Midwifery (Philadelphia: W. B. Saunders Company, 1964); see also Walter H. Allport, Some Seventeenth Century Obstetricians and their Books (New York: William Wood & Co., 1912); Palmer Findley, "The Midwives' Books," Medical Life, April, 1935; Alfred M. Hellman, A Collection of Early Obstetrical Books (New Haven: [n.n.], 1952).

[5]A. J. O'Hara-May, "The Elizabethan Dietary Approach," Nutrition, 24:4, 1970.

Section 2

DIET IN MEDICINE

Since concepts of human physiology of that time bear little similarity to present-day ideas, a consideration of those concepts will begin this discussion of the role of diet in medical treatment. All of creation consisted of four elements: earth, air, fire, and water. Corresponding to these the human body contained four liquid humors, black bile, blood, yellow bile, and phlegm, that circulated in the blood to nourish the body. Concomitantly all of creation manifested one or more of the basic qualities of hot, cold, moist, and dry. These qualities in combination defined the complexion, or temperament, or nature, of every part of creation. The following table illustrates the relationships between humors, elements, qualities, and temperament:

Element	Humor	Common Quality	Temperament
Earth	Black bile	Cold and dry	Melancholic
Air	Blood	Hot and moist	Sanguine
Fire	Yellow bile	Hot and dry	Choleric
Water	Phlegm	Cold and moist	Phlegmatic[6]

Even though every person contained all four humors, one was more plentiful or dominant and determined his complexion. Each humor and corresponding

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[6]E. M. W. Tillyard, The Elizabethan World Picture (New York: Vintage Books, 1943), p. 69; and Sir Thomas Elyot, The Castell of Helthe (London: Thomas Bertheleti, 1541), pp. 2a-3a.

complexion manifested itself in the individual by certain recognizable signs. As an example, the following signs characterized one of a melancholic temperament:

> Leannesse with hardnesse of skynne.
> Heare [hair] playne and thynne.
> Colour duskysh, or white with leannes.
> Moche watche. [much watching; i.e., stayed up late at night]
> Dremes fearefull.
> Stiffe in opinions.
> Digestion slowe and yll.
> Tymerous and fearefull.
> Anger longe and frettinge.
> Seldome lawghynge.
> Urine watry and thynne.[7]

The even-tempered individual manifesting a perfect balance of humors existed only as an ideal type in the literature of the time.[8]

The balance or relative proportions of the four humors determined a person's state of health and well-being:

> In the body of Man be foure principall humours which contynuinge in the proportion, that nature hath lymytted, the body is free from all sycknesse. Contrarywise, by the increase or diminution of any of them in quantitie or qualitie over or under their natural assignement, inequall temperature commeth in to the body, whiche syckenesse, followeth more or lasse, accordynge to the lapse or decaye of the temperatures of the sayd humours....
> . . . . . .
>
> Besydes the sayd complexions of all the hole body, there be in the partycular members, complexions, wherin if there be any distemperance, it bryngeth syckenesse or griefe in to the member.[9]

As did man and the rest of nature, foods manifested the four elemental qualities in varying degrees. Additionally, foods possessed other characteristics that related to maintenance of humoral balance. These traits

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[7]Elyot, p. 3a.

[8]Tillyard, p. 70.

[9]Elyot, pp. 8a and 3a.

made specific foods costive or laxative, diuretic, sudorific, or aphrodisiac; able to cause putrefaction, flatulence, or oppilations [obstructions]; or full of superfluities that led to unnatural humors.[10] Garlic illustrates these characteristics in a specific food:

> Garlick is hot and dry almost in the fourth degree, for outwardly it exulcerates the skin, but it is weaker being boyled then raw, and moves urine, excites the flowres [menses], begets wind, and hurts the eyes; it helps the concoction of the stomack, if it labour with a cold distemper, if you swallow some whole cloves in a morning like pills.
>
> It opens the obstructions of the bowels, cuts thick and clammy humours, and cleanses them; it purifies the lungs, and makes the voice clear; it kills worms, and resists poyson, so that it is called the Countryman's Treacle.[11]

These traits characterizing each food resulted from empirical observations of its effects.

From a knowledge of the many qualities and characteristics that foods might possess, it is not difficult to see the potential effects one's diet might have on his humoral balance and state of health. Most physicians of the time felt that these effects were so profound that a person's very constitution could be altered by his diet:

> For custome is a second nature, seeing that meats used a long time do alter nature, and render it of the same likeness. By nature we understand the temper of the body, which becomes like the nourishment to which it is long accustomed.[12]

Ingested food was broken down and assimilated by the body in the processes of concoction, which encompass our notion of digestion. These processes took place in the gastrointestinal organs as well as in other organs of the body. The first concoction occurred in the stomach where the

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[10] O'Hara-May, p. 8.

[11] Lazare Rivière, The Universal Body of Physick (London: Henry Eversden, 1657), p. 263.

[12] Rivière, Universal, p. 233.

innate, or natural, heat changed the food into chyle. Innate heat could be increased with exercise, decreased by idleness, and depended upon one's complexion; thus, a person of sanguine complexion had greater natural heat than one of melancholic temperament. The first concoction is likened to cooking, with the stomach a pot and the liver the seat of the natural heat that cooked the food in the pot. Both food and air fueled the fire of the innate heat; too much or the wrong kind of food could suppress the fire. In the second concoction the liver extracted the chyle from the small intestine and changed it into blood containing the four humors. The third concoction occurred in each organ where the blood provided nourishment. Each organ changed the blood into its specific metabolic product; for example, the third concoction in the gonads changed blood into seed.[13]

The concept of nutrition followed closely from these ideas of digestion. The innate heat must be maintained by food and air. Additionally, the body continually discharged matter through the pores in the process of transpiration. Nutrition, then, replaced the matter consumed by the body in maintaining the natural heat and in transpiration without altering its constitution. A nutriment aided the body to grow or maintain its status. A drug, on the other hand, changed the complexion of the body.[14]

Closely related to the concept of nutrition were the three kinds of diet used in health and illness: full, moderate, and thin, or sparing. A full diet increased the strength, flesh, and humors and was appropriate for young, growing, active, and strong individuals. A moderate diet preserved

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[13]Robert Burton, Anatomy of Melancholy, ed. A. R. Shilleto, 3 vols. (London: George Bell & Sons, 1896), p. 178.

[14]Owsei Temkin, "Nutrition from Classical Antiquity to the Baroque," Human Nutrition Historic and Scientific, ed. Iago Galston (New York: International Universities Press, Inc., 1960), pp. 86-87.

the strength and was for those who had attained full growth and were in good health. A thin or sparing diet diminished the strength and was employed only in time of sickness.[15]

Traditionally diet represented a person's way of life, or regimen. This included the six non-naturals, external factors that affected the functioning of the body. Air, or climatic conditions, meat and drink, sleeping and waking, exercise and rest, fullness and emptiness, and passions of the mind comprised the six non-naturals. Exercise, for instance, stirred up the natural heat which aided concoction.[16] Most authors felt that meat and drink exerted the most influence on the state of the body and tended to restrict the meaning of diet to include only meat and drink.[17] This restricted meaning of diet is used in this paper.

Temperance, or moderation, in diet represented the key concept that related diet to one's state of health. A temperate diet provided only that amount of food and drink that the stomach could concoct and assimilate completely for the nourishment of the body. However,

> ...temperance is not to be understood as if there were a set proportion for all alike, for it is according to every ones Constitution: what is too much for one Man or Woman, may be too little for another; it is then such a quantity of Meat or Drink, that the Stomach can well master and digest, for the feeding of the Body.[18]

The other five non-naturals as well as a person's age,sex, occupation, and

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[15]Thomas Moffett, Helth's Improvement (London: Samuel Thomson, 1655), p. 8.

[16]Nicholas Culpeper, A Directory for Midwives (London: H. Sawbridge, 1684), p. 38.

[17]Rivière, Universal, pp. 219-220.

[18]Jane Sharp, The Compleat Midwife's Companion, 4th ed. (London: John Marshall, 1725), p. 62.

temperament were the principal factors that affected the amounts and kinds of food one could eat in a temperate diet. For instance, if there were too much natural heat, as in a state of emptiness, the food could be burnt, which resulted in unnatural humors. An excess of food and drink resulted in a state of surfeit, or repletion.

Surfeiting led to an overabundance of humors. The immediate effects of these excesses could be any or all of the following manifestations:

> ...pain and heaviness in the head, long and troubled sleeps, troublesome dreams, when a man imagines himself to be fighting, sleep in the daytime, chiefly after meals, laziness of the whole body, weariness, and pain either in the whole, or in any part thereof, want or decrease of appetite, crudities in the stomach, sowre or inodorous belches, and hard binding of the belly...uncustomary abundance of wind, looseness of the body proceeding sometimes from the meat corrupted, sometimes from a dysentary.[19]

If surfeit was not felt to be the primary cause, it certainly represented the leading internal cause of disease. Since most disease followed from excess humors, the logical treatment, then, was to rid the body of these humors. This could be accomplished by evacuation, "which is nothing else but an expulsion of the humour out of the body," and included phlebotomy, vomiting, diarrhea, and sweating.[20]

The foundation for dietary treatment of disease consisted of two principles. The first was the humoral theory of disease. Since each humor manifested specific characteristics, a diagnosis of the offending humor was possible. Appropriate therapy usually included a diet rich in foods of qualities contrary to the aberrant humor or humors:

> That when any Man is sick or distemper'd, his Meats should be of contrary Qualities to his Disease; for Health itself is but a kind of Temper gotten and preserv'd by a convenient Mixture of Contrarieties.[21]

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[19] Rivière, Universal, pp. 224-225

[20] Rivière, Universal, pp. 319-320.

[21] John Arbuthnot, An Essay Concerning the Nature of Aliments, 3d ed. (London: J. Tonson, 1735), p. 236.

Secondly, it was felt that food during an illness not only nourished the body but also nourished the disease:

> In healthy people the strength of nature is to be preserved or increased with nourishment, not to be broken; which cannot be in sick persons, because a moderate diet preserving the health in healthy people, diminisheth it in those that are sick, by increasing the disease; because by how much the more you feed it, by so much the more you hurt the body of the patient.[22]

In sickness, then,a sparing diet, which should include foods with qualities contrary to the offending humor(s), must be followed. Additionally, as pointed out above, the diet could also be used to induce vomiting, diarrhea, or sweating to purge the offending humor(s).

These concepts also provided the foundation for the role of diet in pregnancy. The choice of specific foods during pregnancy can be understood by reference to these principles.

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[22]Rivière, Universal, p. 224.

Section 3

FETAL NUTRITION AND ABORTION

In examining the application of these principles of diet and nutrition to pregnancy, only their role in carrying the pregnancy to a successful parturition will be considered. Dietary ideas and practices to prevent conception or to induce abortion have not been investigated. Interestingly enough, the goal of preventing abortion emerges as the unifying concept that allows us to view dietary manipulations during pregnancy as rational therapy for achieving a term pregnancy and a healthy child and mother.

Our present-day understanding of abortion encompasses any premature expulsion from the uterus of a non-viable conceptus.[23] The important idea here is that of nonviability, which corresponds to notions of abortion prevalent during the sixteenth and seventeenth centuries. Expulsion of the embryo from conception to the end of the second month was described by various terms, including effluxion, expulsion, and shift.[24] After the second month of gestation abortion, or miscarriage, denoted the following:

> ...but when the Infant is already formed, and begins to live, if it comes before the time ordain'd and prescribed by Nature, it is an Abortion: Which may happen from the second to the beginning of the

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[23] Dorland's Illustrated Medical Dictionary, 24th ed. (Philadelphia: W. B. Saunders Company, 1965).

[24] Jacques Guillemeau, Childbirth. (London: A. Hatfield, 1612), p. 70.

> seventh Month, for afterwards it is accounted a Birth, because the Infant being strong enough, and having all its Perfections, may then live, which is impossible, if he comes before.[25]

For convenience abortion is used in the modern sense to include premature expulsion of the conceptus at any stage of gestation.

Diet, through its role in nourishing the embryo and fetus, related directly to preventing abortion. The view that the menstrual blood provided fetal nourishment prevailed during this time. One of the earlier explanations of the menses appeared in The Birth of Man-kinde:

> ...wherefore prudent Lady Nature full wisely hath provided, that there should alwayes be prest and ready a continuall course and resort of bloud in the vaynes of the matrix, as a very naturall course, spring, fountaine, or well, evermore ready to arrouse, water, and nourish the feature, so soone as it shall be conceived....
>
> Which food, although it be ordayned for this necessary purpose, yet when the purpose fayleth (as it doth when there is no feature in the wombe to be fed therewith) it should be to the place but a burthen and unprofitable load, there to remaine or linger: wherefore then I say, at her set and prescript time shee laboureth to cleare her selfe of it, and to expell it as superflous and serving to no use.[26]

A somewhat different approach to the menses emerges in the seventeenth century in A Directory for Midwives:

> ...and we know that women have them [terms] not the greatest part of the time they go with Child, nor most women when they give suck: and if the child be not nourished with the same blood in the one, and it converted into Milk in the other, what becomes of it?[27]

The "navel-vein" conveyed this blood from the mother to the fetus. It is obvious that the nutritive quality of this blood depended not only upon the amount of food ingested by the mother, but also upon the kinds of food and

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[25]Francois Mauriceau, The Diseases of Women with Child, trans. Hugh Chamberlen (London: A. Bell, 1672), p. 110.

[26]Eucharius Roeslin, The Birth of Man-kinde, trans. Thomas Raynald (London: A. H., 1626), pp. 48-49.

[27]Culpeper, p. 57.

their effects upon her humoral balance.

The inability of the maternal circulation to provide adequate nourishment to the fetus initiated parturition:

> When the naturall prefixed and prescribed time of child-birth is come, the childe being then growne greater, requires a greater quantity of food: which when he cannot receive in sufficient measure by his navell, with great labour and striving hee endeavoureth to get forth...[28]

Or put more simply, when the fetus could not obtain sufficient nutriment in the womb, it came out to seek sustenance.[29] Thus, in giving general dietary advice most treatises on midwifery counselled that "when the child is bigger, let her diet be more, for it is better for women with child to eat too much than too little, lest the Child should want nourishment."[30] Provided the woman was otherwise in good health, she could rely upon her appetite to regulate the proper amount of food to nourish her and her fetus.[31]

The idea that insufficient fetal nourishment initiated labor figured prominently in explanations of abortion. Diminished nutriment in maternal blood for whatever reason and at any time during gestation could result in weakened, sickly fetus or abortion:

> Defect of Humors fitting to Nourish, springs from such Causes, which are able to draw the Nourishment from the Child, as fasting, whether voluntary or forced; as when women with Child loath al kind of Meat, or vomit it up again; a thin diet in acute diseases, immoderate bleeding by Nose, Haemorrhoides, Womb, or by immoderate Phlebotomy....If a woman with Child go very much to stool, it is to be feared that she wil Miscarry. Hereunto may be referred extream leanness of the whol body, wherein there is not Blood enough to nourish the Infant.[32]

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[28]Percivall Willughby, Observations in Midwifery (Warwick: H. T. Cook and Son, 1863), p. 15; see also Rivière, Universal, p. 65.

[29]Guillemeau, p. 19. [30]Culpeper, pp. 156-157, Book IV.

[31]Mauriceau, p. 50.

[32]Lazare Rivière, The Practice of Physick (London: Peter Cole, 1665), p. 513.

Paradoxically surfeiting could also lead to fetal demise and abortion. The plethora of humors suffocated,[33] strangled,[34] or choked[35] the fetus. Rivière in The Practice of Physick briefly explained the mechanism for this and considered other mechanisms of abortion resulting from overeating:

> Fulness of Blood opens the Veins of the Womb, or strangles the Infant while it is in the Womb....
> But badness of Humors, is either chollerick and sharp, so as to open the Orifices of the Veins, or by provoking Nature, to stir up the expulsive faculty, whereby the child comes to be expelled with those evil Humors; or by reason of plenty of Excrements heaped together in the first Region, and distending the belly, it suffocates the Child, or it vitiates the blood in the whol habit of the Body, rendring it unfit to nourish the child, or it fils the Vessels of the Womb which retain the child, ful of slime and snot.[36]

Finally, too much nutriment might cause the fetus to outgrow the womb:

> ...Also the too great quantity of meat his Mother takes, may often stifle him, or else make him grow so big, that he cannot keepe himselfe in his place, which constraines him either to come forth, or else makes him sickly, seeing that those meates are corrupted wherewith hee is nourished and fed.[37]

These extremes of diet, fasting and surfeiting, fell under the province of moderation, or temperance, in diet. Temperance and other means of preventing abortion usually appeared in midwifery manuals in a section outlining general dietary advice for the gravida. An examination of the aspects of this advice not covered above proves interesting. The Complete Midwife's Practice Enlarged, a representative seventeenth century midwifery manual, contains this excerpt:

> For her Diet, she ought to choose meat that breeds good and

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[33]Jacob Rueff, The Expert Midwife (London: by E.G. for S.E., 1637), p. 164.

[34]Roeslin, p. 135 and Culpeper, p. 113. [35]Sharp, p. 117.

[36]Rivière, Practice, p. 515. [37]Guillemeau, pp. 19-20.

> wholsome nourishment, and which breeds good juice; such are meats that are moderately dry;...
>
> All meats too cold, too hot, and too moist, are to be avoided, as also the use of Salads and Spiced meats, and the too much use of salt meats are also forbidden, which will make the child to be born without nails, a sign of short life. Her bread ought to be good wheat, well baked and levened. Her meats ought to be Pigions, Turtles, Pheasants, Larks, Partridge, Veal, and Mutton. For herbs, she may use Lettice, Endive, Bugloss, and Burrage, abstaining from raw Salads: for her last course, she may be permitted to eat Pears, Marmalade, as also Cherries and Damsins; she must avoid all meats that provoke urine, or the terms; and such meats as are windy, as Pease, and Beans....[38]

The concern for adequate nourishment for the fetus is prominent, as is the counsel of moderation. The advice to eat "moderately dry" foods probably stems from the idea that women in general tended to have a cold and moist temperament and reflected similar advice found in Hippocrates. Hippocrates also provides a possible explanation for avoiding foods either too cold or too hot: "Cold drinks, cold food or cold generally tends to constipation. Excess of heat produces coagulation and prevents food absorption."[39] And Moffett in Healths Improvement tells us that "sharp spices are most unfit for tender bodies, whose substance is easily melted and enflamed."[40]

The implication of salt as a teratogen, according to Guillemeau, comes from Aristotle and Pliny; he does not, however, explain the etiology of this effect of excess salt.[41] However, Moffett felt that too much salt

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[38]John Pechey, (ed.), The Compleat Midwife's Practice Enlarged, 5th ed. (London: H. Rhodes, 1698), pp. 63-64.

[39]Hippocrates, Hippocrates on Diet and Hygiene, ed. John Precope (London: Williams, Lea & Co., Ltd., 1952), pp. 189 and 66.

[40]Moffett, p. 286.

[41]Guillemeau, p. 20.

could be detrimental to the gravida aside from its teratogenic action:

> ...For salt meats engender cholor, dry up natural moistures, enflame blood, stop the veins, gather together viscous and crude humors, harden the stone, make sharpness of urine, and cause leanness; which I speak of the accidental salt wherewith we eat all meats, and not of that inborn salt wich is in all things.[42]

Regarding her bread, Rivière counseled that "bread which wants leaven, or hath not enough, is hard of digestion, oppresses the stomach, and begets terrible obstructions," as does incompletely baked bread. Rivière also pointed out that the animal meats recommended during pregnancy were among the most temperate in the animal kingdom. For example, "Ring-doves, Turtles, Quailes, Thrushes, Blackbirds, Larks, and other mountain birds obtain the next place to Partridges; they breed excellent juice, nourish well, and have very little excrement."[43]

The observation "that all raw herbs and sallets breed Melancholy blood, except buglosse and lettuce,"[44] might explain the caution to abstain from raw salads. These herbs were better eaten after boiling. The fruits recommended as the final course "help concoction eaten at the end of a meal, because they shut the mouth of the stomack."[45] Diuretic foods that provoked urine and the menses endangered the fetus, as shown above, by impairing its source of nourishment through loss of blood. Finally, it was felt that during "the first three moneths, Aborcements are caused through ventosities and windinesse."[46]

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[42]Moffett, p. 40

[43]Rivière, Universal, pp. 257-258, 283.

[44]Burton, p. 252.

[45]Rivière, Universal, p. 265; see also Guillemeau, p. 20.

[46]Rueff, pp. 171-172.

As one examines this general dietary advice, the concern in preventing abortion stands out. Adequate fetal nutrition certainly represented a major component of this concern. In addition some of the ways that the diet could be manipulated to maximize nourishment and minimize digestive difficulties become apparent. The caution to avoid extremes of temperature and seasoning, to select the proper kind of bread and animal meats, and the advice to end each meal with a certain fruit all contributed to achieving this goal. Considerations of dietary means to prevent vomiting, constipation, terms, and diarrhea, all of which might result in miscarriage if left untreated, comprised another component of the endeavor to prevent abortion.

Section 4

ROLE OF DIET IN CONCEPTION AND CONGENITAL DEFECTS

Although one can argue only with great difficulty from a modern viewpoint for a significant role for diet in conception, persuasive arguments existed in the sixteenth and seventeenth centuries for such a role. Diet in a few instances exerted a causal effect in preventing conception, and in situations of infertility a therapeutic effect. Paradoxically, one finds little discussion of the role of diet in congenital malformations.

The understanding of conception during this period differed from ours. Conception was seen as "an action of the womb, whereby the fruitful Seed of the Man and Woman are received and kept, that a Child may be formed."[47] This process occurred in the following way:

> ...the Woman...[gives down] sufficient quantity of Spirits, wherewith her Genitals ought to swel at the instant of Generation, that her womb skpping [sic] as it were for joy, may meet her Husbands Sperm, graciously and freely receive the same, and draw it into its innermost Cavity or Closet, and withal bedew and sprinkle it with her own Sperm, powrd forth in that pang of Pleasure, that so by the commixture of both, Conception may arise.[48]

The commingling of the two seeds into one mixture corresponds to our notion of fertilization.[49] Once this has occurred, "the seedes are augmented and increased by the termes."[50] Four points in this process permitted inter-

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[47] Pechey, p. 55.

[48] Rivière, Practice, p. 503

[49] Rueff, pp. 9-10 and Pechey, pp. 96-97.

[50] Rueff, p. 40.

vention that could prevent conception:[51] 1) getting the sperm into the womb, 2) the womb being able to retain it, 3) the womb being able "to cherish the Seed thus attracted, to alter it, and change into the Birth, by raising up that power which before lay sleeping in the Seed, and to reduce it from power into act,"[52] and 4) the woman being able to provide seed for the commingling of the seeds, and then adequate blood to nourish it.[53]

The midwifery manuals, when discussing the factors that might prevent conception, assigned significance to the inability of the woman to receive the sperm into her uterus. Some of the more popular explanations included physical immaturity of the female genitalia and reproductive organs, the effects on these parts of "over great Age," physical malformations, "over great fatness, which straitens the passages of the womb, and by greatness of the Belly, hinders the right and fit Conjunction of the man with the woman," diseases of the genitalia and adjacent structures, and a lack of carnal desire.[54]

Of these causes only obesity and lack of carnal desire were amenable to dietary therapy. "An extenuating Diet and convenient Evacuations" would remedy the obesity.[55] The role of diet in increasing carnal desire was more complex and interesting:

Wholsom food for such, are Cocks stones, Lamb stones, Sparrows,

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[51] Roeslin, p. 188, suggested that defective seed could not yield a conceptus, but did not pursue the matter.

[52] Pechey, p. 51

[53] Rivière, Practice, p. 504.

[54] Rivière, Practice, p. 503.

[55] Rivière, Practice, p. 506; as pointed out earlier, evacuation included phlebotomy, vomiting, diarrhea, and sweating.

> Partridge, Quails, Pheasants eggs; and take this for an Aphorism of truth, both in this, and all other parts of Physic; Whatsoever any Creature is addicted extreamly to, they move the Man that Eats them to the like by their Mummial Vertue. Therefore Partridges, Quails, Sparrows, &. being exceedingly addicted to Venery, they work the same in those Men and Women that Eat them.
>
> I will give you another. Look in what part of the Body the Faculty which you would strengthen lies, and take the same part of the Body of another Creature, in whom the Faculty is Strong, as Medicines. For Example, The Vertue procreative lives in the Testicles, therefore Cock-stones, &. are Medicinal for this disease.[56]

This kind of dietary therapy stretches to an extreme the use of a food's characteristics to effect specific physiological changes. Rather than relying on effects empirically derived from observation after ingesting the food, as illustrated earlier with the example of garlic, this kind of advice appeals to the belief that the habit of the animal or the function of the organ that is ingested will be imparted to the person who eats of it.

Disorders of the uterus figured prominently in preventing conception by affecting its ability to retain the sperm and to cherish it. We learn that "the most frequent Cause of Barrenness is a cold and moist distemper of the whol Body and of the Womb." Excessive moisture in the uterus prevented retention of the sperm long enough for mixing with the female seed to occur. In addition, every distemper of the uterus could prevent conception by not providing sufficient nourishment for the seed:

> Namely, a cold distemper, which extinguisheth the Seed; and hot distemper, which dissipates the Spirits; a moist distemper, which robs the Seed of its due thickness; and a dry distemper consumes and drinks up the Seed: and thus the Seed being by these distempers corrupted and degraded from its natural Constitution, becomes unfit for Conception.[57]

Diet could play a role in creating these disorders. As an example, a diet of a "cooling nature" containing fruits, herbs, and "cold smal Drink"

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[56]Culpeper, p. 72; see also Rivière, Universal, p. 379.

[57]Rivière, Practice, pp. 507 and 503.

[beer] contributed to establishing a cold distemper. Conversely, an appropriate diet rich in qualities contrary to the excess humor made up an important part of the therapy in dispelling these distempers.[58]

The quantity of blood available to form the woman's seed and to nourish the embryo was dependent upon several factors. Since the menstrual blood nourished the conceptus, a stopping of her terms left a woman barren:

> Retention and staying of the Termes causeth the same thing [barrenness], which doth much distemper and molest the Matrix, and suffocateth and choketh the seed cast forth into the womb through an abundance of evill humors.[59]

Diet contributed to this condition in the following ways:

> ...meats over hot and binding, whereby the humours are burned, the body dried, and concoctions are hindred, also meats which are too cold congealing and freezing (as it were) the rest of the humours of the Body by their coldnesse, and letting them from issuing forth by restraining and binding them.[60]

Excess or corrupt humors could also stop the menses by "bearing sway in the blood;" intemperate diet, we know, could corrupt a humor. "Immoderate fasting" and "too much fatnesse" could accomplish the same result.[61]

The diagnosis of the offending humor, whether caused by dietary excess or some other factor, was made by evaluating the signs in the woman. The following description illustrates the signs by which one could diagnose phlegm as the causative agent in stopping the menses, and gives a mode of treatment:

> If the cause be from Phlegme, the woman waxe pale, the eyes doe become blewish, the eye-browes doe swell, cold is felt in the bottome of the Matrix, thick and stinking humors doe issue from it, white

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[58] Rivière, Practice, pp. 504 and 506; see also Rueff, pp. 25-38, Book VI.

[59] Rueff, p. 14, Book VI.

[60] Rueff, p. 100, Book VI.

[61] Rueff, p. 101, Book VI.

> Termes doe drop from them, the Yrine is plae [sic.], like unto Milke, thicke, and grosse substance is found in the bottome. But where this cause shall be observed and found, first, the diet shall be directed and ordered to a hot and dry temperature; Next that cold matter shall be mollified and prepared for purgation, with this syrup...[62]

The modes of effecting a cure along with diet and purging included potions, pills, powders, infusions, baths, and pessaries.

Other causes of an inadequate quantity of blood for nourishing the conceptus included obesity and extreme leanness:

> The fourth Cause of Barrenness, which consists in defect or badness of the Menstrual blood, is known, first by the over great fatness of the whol Body, to the nutriment whereof the blood is carryed away, and consumed, and is not allowed for the nutriment of the child in the Womb. The same is likewise known by great Leanness of the Body, and extream slenderness; for when there is not blood enough to nourish the Body, it can hardly superabound to nourish the Conception....
>
> Sometimes likewise, over great quantity of blood, doth hinder the nourishment of the Seed, and of the Conception; for the Seed is oppressed with so great plenty, and cannot exercise its formative faculty: which is wont to happen in ful bodyed,and ruddy women, such as live a jovial life, and delight in Feasting, whose Wombs are alwaies bedabled with a continual moisture.[63]

Obesity and leanness could be corrected by dietary manipulation. The advice of those who lived a "jovial life" included the following:

> If Barrenness seem to arise from a bad Course of Diet, as in persons given over much to belly-cheer, to Wine, or smal Drink, such women are to be reduced to an exact Course of Life; and all excess of Eating and Drinking must be avoided.[64]

Other causes of inadequate blood for nourishing the conceptus included a "bad Diet, producing none of the best blood. So women which gorge themselves with much raw fruit, and cold smal Drink, breed wheyish blood unfit for Generation."[65]

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[62] Rueff, p. 103, Book Vi.

[63] Rivière, Practice, P. 505; see also Rueff, p.48, Book VI.

[64] Rivière, Practice, p. 506.

[65] Ibid., p. 504.

Not only did the quality of her blood affect the woman's ability to nourish the embryo, but it also affected the quality of the seed itself. Specifically, the quality of the seed determined in part the quality of the conceptus and child; in other words, defects in the seed could cause congenital anomalies. In general, other explanations of congenital defects, such as hereditary factors, divine retribution for intercourse during the menstrual period, intercourse with animals, the woman's imagination during pregnancy, and events occurring during pregnancy, gained much more notoriety than a defect in the seed.[66] Rueff, however, suggested that "the corruption and fault of the seed is to bee acknowledged, to wit, which was either too much, or too little, or corrupted, from whence those monsters are ingendred." He goes on to propose that "the immoderate desire of lust" caused these defects in the seed:

> Likewise we allege the immoderate desire of lust to be a cause, whereby it commeth to be very feeble and imperfect, whereby of necessity a feeble and imperfect Feature must ensue. For the defect of seede going before, the consequence is, that a defect of the Feature doth follow;...[67]

In the seventeenth century attempts were made to explain the etiology of these defects in the seed by reference to the quality of the blood. An intemperate diet, as one might expect, degraded the quality of the blood. The defect in the seed caused by dietary excess manifested itself not by obvious congenital malformations but instead by subtle aberrations that resulted in death during infancy. The pathophysiology and prevention of this defect come directly from the principles examined in

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[66] Rueff, pp. 8-9; see also Culpeper, pp. 110-111, 122-123.

[67] Rueff, pp. 151, 153.

the second section of this paper:

> This intemperance of parents, is the cause that many Children die before their time; for what is too much, can never be well concocted, but turns to ill and raw Humours, and if the Stomach turn the Food into crude Juice, or Chyle, the Liver that makes the second concoction can never mend it, to make good blood; nor can the third concoction of the Stones to turn that Blood into Seed, make good Seed of ill Blood;...[68]

From these examples showing a causal relationship between the quality of the seed and congenital anomalies, one may speculate on the existence of a belief that an extreme defect in the seed could result in intra-uterine death and abortion at any stage of gestation.

Another interesting concept of congenital anomalies not manifested as gross deformities but as subtle, detrimental changes affecting the longevity and quality of life had come down from Soranus. After laying down a number of precise rules for a woman to follow immediately after conception to protect against miscarriage, he warned:

> Even if a woman transgresses some or all of the rules mentioned and yet miscarriage of the fetus does not take place, let no one therefore assume that the fetus has not been injured at all. For it has been harmed: it is weakened, becomes retarded in growth, less well nourished, and, in general, more easily injured and susceptible to harmful agents; it becomes misshapen and of an ignoble soul.[69]

Along with the poorly explained effect of too much salt during pregnancy mentioned earlier, these examples stand out as the only obvious attempts to relate diet to congenital anomalies. They also represent attempts to lend credence to the doctrines of moderation in diet both before and after conception by invoking consequences of transgression, high perinatal and childhood mortality rates, that were obvious but impossible to verify.

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[68]Sharp, pp. 62-63; also Culpeper, pp. 32-33.

[69]Soranus of Ephesus, Gynecology, trans. Owsei Temkin (Baltimore: Johns Hopkins Press, 1956), p. 48.

Section 5

A SICKNESS OF NINE MONTHS

As indicated at the beginning of this paper, diet during pregnancy represents one facet of obstetrical management. Some understanding of the physiologic state of pregnancy must underlie any rational program of obstetrical management. Pregnancy in the sixteenth and seventeenth centuries was regarded as a more fragile condition than it is today, for at that time pregnancy represented a kind of sickness:

> A Woman with Child, in respect of her present Disposition, altho' in good Health, yet ought to be reputed as tho' she were sick, during that neuter Estate (for to be with Child, is also vulgarly called a Sickness of nine Months) because she is then in daily Expectation of many Inconveniencies, which Pregnancy causes to those that are not well governed.[70]

Although pregnancy was seen popularly as a time of sickness, physicians did, in fact, consider pregnancy a manifestation of the "neuter Estate."

Before one can make much sense of much of the obstetrical management of that time, he must gain an understanding of the "neuter Estate." As the term implies it represents a state between health and sickness:

> ...But the Physicians term that unhealthy, or morbous state, when some actions of the body are manifestly out of tune; healthy when they persist in a symmetry; but neutral, when they are neither manifestly vitiated, nor altogether whole; such a disposition is evidently apparent in those which are in a tendency to, or in a recovery from a Disease;...[71]

To use a modern example, the neutral condition seems to represent the prodromal state of a viral illness or the period during a bacterial pneumonia

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[70] Mauriceau, p. 48.

[71] Rivière, Universal, pp. 67-68.

just after antibiotic therapy has assisted the host in overcoming the infection but when the host might be particularly vulnerable to reinfection by a resistant organism or virus.

The concept appears, then, that the gravida existed in a state of health which represented a precarious balance between health and sickness that could, if not prevented by good obstetrical management, change rapidly into a state of disease with potentially grave consequences for both mother and fetus. Mauriceau provides a clear illustration of proper obstetrical management which considers this precarious balance:

> She should in this Case resemble a good Pilot, who being imbarked on a rough Sea, and full of Rocks, shuns the Danger, if she steers with Prudence; if not 'tis by Chance if she escapes Shipwreck: So a Woman with Child is often in Danger of her Life, if she doth not her best Endeavor to shun and prevent many Accidents to which she is then subject: All which Time Care must be taken of two, to wit, herself and the Child she goes with:...[72]

We have already seen that the primary objective of this prudence was to avoid abortion. A temperate diet that provided adequate nourishment for the mother and fetus while minimizing digestive difficulties and foods that might bring on dangerous situations (constipation, vomiting, terms, and fluxes) served as the foundation of obstetrical management. This management also included proper treatment of other potentially dangerous conditions or situations, some of which appeared to be inherent to pregnancy.

PICA

Pica, or a depraved appetite, afflicted many pregnant women and seemingly resulted directly from their being pregnant. The most popular

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[72]Mauriceau, p. 48.

theory of its etiology proposed that cessation of the menses in pregnancy engendered evil humors which normally were expelled but now flowed into the stomach. This resulted in a condition in which " the sides and tunicles of the stomacke, and orifice thereof, are infected, and stuffed with divers excrements, and ill humours." It could begin from sometime during the first week to as late as the fortieth day after conception, and brought on cravings for vinegar, salty foods, coals, ashes, plaster, sand, chalk, and more. The condition generally lasted until the fourth month of gestation when it ceased for the following reason:

> ...the child is is [sic] growne bigger, and having need of mor Nourishment, draws to him a greater quantity of bloud the which he consumes: and so by consequent, it returnes backe no more into the stomacke.[73]

Further explanation will make the pathophysiology of this condition clearer. Once the male and female seeds had commingled in the womb, the blood otherwise lost in the menses began nourishing the conceptus in the following manner:

> Now this blood, presently after conception, is distinguished into three parts: the purest of it drawn by the Child for the nourishment of it self; the second, which is less pure and thin, the Womb forces upwards to the breast, where it is turned into milk. The third and most impure part of the blood remains in the Matrix, and comes away with the Secondines, both in the Birth, and after the Birth.[74]

Initially the amount of blood required by the embryo and placenta was less than that normally lost in the menses; the excess blood settled in the stomach. Generally by four months of gestation the fetus and placenta

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[73]Guillemeau, pp. 36 and 37; see also Pechey, p. 64; Soranus, pp. 49-50; and Mauriceau, p. 57.

[74]Pechey, p. 102; see also Rueff, p. 39.

consumed the surplus blood.[75]

Careful choice of diet based on a few general principles comprised the treatment of choice in pica. Above all the diet must be flexible and able to accomodate to the unusual desires that characterize the affliction:

> ...Meat and Drink, tho' not so wholesome, if more acceptable, is to be preferred before that which is wholesome, and not so pleasant: Which in my Opinion is the rule they ought to observe, provided what they long for, is commonly used for Diet, and not strange and extraordinary Things; and that they have a care of Excess.[76]

If allowed to eat coals and the other unusual foods listed above, the gravida subjected herself and her fetus to malnourishment, which could result in abortion. She should include broths made with sorrel, lettuce, succory, borrage and new-laid eggs, all of which purified the blood "because big-bellied Women have never good Blood,...She must avoid hot-seasoned Pies and baked Meats, and especially Crust, being hard of Digestion, extremely overchargeth the Stomach." In addition she should augment her meals with a bit of wine diluted with water to enhance digestion and "comfort the stomach, always weak during Pregnancy."[77]

VOMITING

The abundnace of humors afflicting the stomach early in pregnancy could also cause vomiting. In addition, vomiting in pregnancy might result from "the ill meats they eat, and that in great quantity, as also because

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[75]Guillemeau, pp. 37 and 41, and Mauriceau, p. 59.

[76]Mauriceau, pp. 49-50; see also Rueff, pp. 164 and 169-170.

[77]Mauriceau, p. 50; see also Pechey, p. 66.

they fill themselves too much with good meat, which doth putrifie and corrupt, (the naturrall heat being weak) and requires rather to bee cast forth, than kept in the body."[78] Both Guillemeau and Mauriceau agreed that this vomiting could and did ensue soon after conception. Because of the short time between conception with cessation of the terms and the onset of vomiting, Mauriceau rejected the above, popular theory that excess humors from the stopped menses caused vomiting. Instead, he attempted to explain the origin of this early vomiting by a nervous connection between the uterus and stomach:

> ...these first Vomitings proceed from the Sympathy between the Stomach and the Womb, because of the Similitude of their Substance, and by means of the Nerves inserted in the upper Orifice of the Stomach, which have Communication by Continuity with those that pass to the Womb, being Portions of the sixth Pair of those of the Brain,...[79]

The irritation of the womb caused by the events of conception produced the stimulus to the stomach responsible for inducing this early vomiting.

Such vomiting, if not too violent, frequent,nor lasting beyond the third or fourth month, benefited the gravida by casting out those evil humors that induced it and, if applicable, pica.[80] However, continuing longer than four months, vomiting could have the following dangerous effects on the mother and fetus:

> ...it weakens the Stomach very much, and hindering Digestion, corrupts the Food, instead of concocting it, whence afterwards are engendred those ill Humours which need purging.
> . . . . . .
>
> ...the Aliment being daily vomited up, the Mother and the Child having Need of much Blood for their Nourishment, will thereby grow extremely weak, besides the continual Subversion of the Stomach, causing great agitation and Compression of the Mother's Belly, will force the Child

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[78]Guillemeau, pp. 43-44. [79]Mauriceau, pp. 57-58.

[80]Guillemeau, p. 40; see also Mauriceau, p. 59.

before its Time, ...[81]

Although the vomiting could not be abolished, its severity and frequency could be reduced by altering the diet. The gravida should follow the general dietary outline set forth above and in Section 3 of this paper, but should eat smaller amounts more often, since the stomach in pregnancy was less able to concoct larger amounts. Smaller portions of food would also allow the stomach to "contain it without Pain, and not be constrained to vomit it up, as it must when they take too much, because the big Belly hinders the free Extension of it." Juice of citrus fruits with the meal or marmalade of quinces eaten after the meal served to strengthen the stomach.[82] She ought to abstain from foods too fat or too sweet, which tended to induce vomiting and soften the membranes of the stomach, already weakened from vomiting. If these measures failed to alleviate excessive vomiting, the evil humors would then have to be dissolved from the lining of the stomach and purged in the stool by drugs.[83]

Some of the other rocks in the rough sea of pregnancy capable of endangering the gravida and her fetus included constipation and tenesmus, fluxes, disorders of the womb, and illness during pregnancy. These conditions did not accompany pregnancy seemingly as a natural consequence, as did pica and vomiting, but could develop if the gravida were careless with her diet.

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[81]Mauriceau, pp. 58 and 59; see also Pechey, p. 70; Guillemeau, p. 44; Sharp, p. 139; Roeslin, p. 135.

[82]Mauriceau, p. 60; see also Pechey, p. 70.

[83]Mauriceau, p. 60; see also Pechey, p. 70 and Guillemeau, p. 38.

CONSTIPATION AND TENESMUS

Every midwifery manual consulted agreed that constipation and tenesmus, a more dangerous disorder, occurred frequently in pregnancy, could lead to abortion, and were amenable to dietary treatment. The usual explanation of the etiology of these disorders emphasized the effects of the uterus pressing against the large bowel, as in this example:

> ...the guts are pressed by the unevennes of the wombe, which is too full, and being placed upon them, (and chiefly upon the great gut) crushes and thrusts them one against another, in such sort, that they have no meanes to enlarge and dilate themselves, thereby to void the excrements contained within them.[84]

Other theories included an improper diet that contained frequent use of "meate or fruits which doe exircate or drye, and constraine or binde" and "all such things as doe harden, restraine, and constipate, as meats broyled or rosted, and Rice, hard egges, beefe, chestnuts, and all sowre fruits, and such like."[85] And still another explanation proposed that in pregnancy the heat in the intestines increased and made their contents unusually hard and dry and unable to move easily. The tendency to become more sedentary during pregnancy added to these other effects.[86] If untreated constipation could lead to tenesmus and its imminent threat of abortion:

> ...Tenesmus [that is perpetual going to the stool and voiding nothing but a little slime] which above all other Diseases is wont to cause Abortion, because by that frequent and almost continual endeavor of going to stool, which perpetually attends this disease, the Muscles of the Belly are perpetually contracted, and do more compress the Womb than the streight Gut upon which the Womb rests; which continual compression or squeezing of the Womb, doth at last cause Abortion.[87]

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[84] Guillemeau, p. 59; see also Mauriceau, p. 54 and Pechey, p. 69.

[85] Roeslin, pp. 94 and 97.

[86] Guillemeau, p. 59.

[87] Rivière, Practice, p. 513; see also Sharp, p. 138; Culpeper, p. 113; Roeslin, p. 133; and Mauriceau, p. 79.

The preferred treatment for constipation resided in the diet. The gravida must avoid those constipating foods listed above and eat foods tending to loosen the bowels, "which must be done with great discretion: for too much moisture may at length over-much relax the ligaments of the womb, and of the child, and therby hasten the delivery."[88] In addition, she should avoid using strong suppositories, clysters, or drugs to induce an evacuation, for "if a big-bellied Woman have a violent looseness, she will be in danger of miscarrying."[89] Specifically, she should include the following foods in her diet:

> Notwithstanding, a woman with child being too costive, may use tender meats, as Veale, wherewith they may make Broths, with Lettuce, Purslane, Sorrell, Spinach, Beets, Buglosse, Violet leaves, and sometimes a little of the herbe called Mercury. Let them use Prunes, and Baked Apples.[90]

FLUX OF THE BELLY

Fear of inducing a flux,or looseness, of the belly led to the above caution against use of strong suppositories, clysters, or drugs when constipated during pregnancy. Our concept of diarrhea corresponds to a flux of the belly. Depending upon the severity, a flux could be either a lienteria, diarrhea, or dysenteria:

> There are ordinarily reckon'd three sorts of Loosenesses, which in general is a frequent Dejection of what is contained in the Guts, by Stool: The first is called Lienteria, by which the Stomach and the Guts, not having digested the Nourishment received, lets is [it] pass almost quite raw. The second is called Diarrhoea, by which they simply

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[88] Guillemeau, p. 59.

[89] Mauriceau, p. 54; see also Guillemeau, p. 24.

[90] Guillemeau, p. 60; see also Roeslin, p. 96; Mauriceau, p. 54; Pechey, p. 70; and Rueff, p. 69.

> discharge the Humours and Excrements which they contain. And the third, which is the worst, is Dysenteria, by which the Patient, together with the Humours and Excrements, voids Blood with violent Pains, caused by the Ulceration of the Guts.[91]

If any of these fluxes continued for very long, or if violent, the result was the same: the mother's body was unable to absorb adequate nutriment from her food for herself and her fetus. This led to malnutrition of both and eventually to abortion. The added effect of the gravida straining down to go to stool, which was particularly severe in dysenteria because of the painful ulcerations, further hastened an early delivery.[92]

The bad diet ingested by those unfortunate women afflicted with pica led to the flux of the belly:

> Women with great bellies are commonly subject thereto, because of the meats they eat, which are of ill juyce: whereby the stomack being weakned, and not able to concoct them, the expulsive faculty is compel'd to thrust them downward, halfe concocted and indigested: otherwise they are corrupted, and turned into some maligne, sharpe, and biting humours: as into fretting choller, rotten flegme, or melancholy, which doe corrode and stir up the bowels, and cause the flux of the belly.[93]

Initially, then, the flux began as a lientery but could progress to a diarrhea and to a dysenteria if not treated adequately.

If the flux was still a lienteria caused by a weakened stomach, she should "abstain from all those irregular Appetites, and accustom herself to good Food of easy Digestion, and a little at a time, that so her strength may be able the easier to concoct and digest it." As in the pica and vomitings, she should drink wine diluted with water to comfort her stomach.[94]

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[91] Mauriceau, p.78.

[92] Guillemeau, p. 61; see also Mauriceau, pp. 78-79; Sharp, p. 139; and Pechey, p. 77.

[93] Guillemeau, pp. 61-62; see also Mauriceau, pp. 79-80.

[94] Mauriceau, p. 80; see also Pechey, p. 77.

If the flux developed into a stubborn diarrhea that was not self-limited with the above diet, she must also purge the evil humors from her intestines by purging medicines. If a dysenteria developed, in addition to purging, she must adopt the following measures designed to breed as few bad humors as possible:

> ...the which may bee easily done by a good dyet, which shall breed as little choller, or other bad humours, as may be: using broths made with Purcelane, Sorrell, Buglosse, and the cold seeds, adding thereto a little Rise, or French Barly. The use of new laid Egges is much commended, which must bee poched in water: Her meat must bee rather rost then boiled: All spices are to bee eschewed.[95]

A digression to examine in more detail some of the foods recommended in this condition will prove valuable. Rivière's The Universal Body of Physick provides some of the qualities of these foods. For instance, we learn that sorrel "helps the hot distemper of the bowels...[and] tempers the acrimony of choler." The qualities of rice further illustrate the appropriateness of this diet:

> ...and the frequent use therof by reason of the thicknesse of the substance [rice] begets obstructions, because of the thickning, and binding faculty which it hath; it is very good for such as are subject to bloudy Flixes, Lasks [diarrhea], and other affections proceeding from a defluxion of thin humours.[96]

DISORDERS OF THE WOMB

We have already discussed the ways disorders of the womb affected conception and the role diet played in causing and treating those disorders. Those roles are not significantly different in uterine disorders arising after conception. Uterine disorders could affect the conceptus in two

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[95]Guillemeau, p. 63; see also Mauriceau,pp. 81-82.

[96]Rivière, Universal, pp. 262, 259.

general ways: 1) distempers of the womb could make it inhospitable for gestation, and 2) the persistence of menses could deprive the fetus of needed nourishment which often led to abortion.

A phlegmatic distemper of the womb appeared to have the greatest propensity for abortion by making the uterus so slippery that the conceptus and placenta could not adhere to it:

> ...Or slimie, flegmaticke, and other waterish humors, that the cauitie or hollownes is thereby made so slippery, that the feature conceived cannot there remaine, but slippeth and slideth forth againe.[97]

Obesity, some felt, also made the uterus too slippery to retain the conceptus.[98] Or, in trying to expel these corrupt humors, the womb would expel the fetus along with them.[99]

Another humoral disorder supposedly affected the cotyledons of the uterus, which were "the vaynes by which the conception and feature is tyed and fastened in the Matrix (thorow the which also the feature receiveth nourishment and food,...)." These vessels became occluded by corrupt humors and the fetus died from lack of nourishment:

> ...[the cotyledons] be stopped with viscous and ill humours, or else swollen by inflation so that they breake, by the which means the feature, destitute of its wonted nourishment, perisheth and dyeth, and that most commonly in the second or third moneth after conception.[100]

None of the authors citing this example offered any evidence to support this theory of abortion during the second or third month. This explanation

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[97] Roselin, p. 132; see also Guillemeau, p. 71 and Culpeper, p. 113.

[98] Culpeper, p. 113.

[99] Guillemeau, p. 71

[100] Roeslin, p. 132; see also Mauriceau, p. 113 and Sharp, p. 138.

was apparently advanced by Hippocrates to give some understanding to abortions occurring at this time in gestation in young women who were neither overly fat nor thin.[101]

The menses often occurred during the first two or three months after conception in normal pregnancies since the embryo required so little blood at that time. In instances when the gravida had an abundance of blood, the loss of menstrual blood served a beneficial purpose:

> ...If they proceed from the sole Abundance, being more than the Fruit can consume for its Nourishment, it is so far from hurting either Mother or Child, that being moderate, it is very profitable to them; because if the Womb were not discharged of this superfluous Blood, the Fruit, which is as yet but little, would be drowned by it, or, as it were, suffocated:...[102]

However, in cases when the woman was weak and thin, or if the menses continued beyond three months or flowed heavily, the blood loss could be great enough that the conceptus would abort for want of adequate nourishment.[103] To prevent this, the woman should rest in bed and eat the following diet:

> ...a strengthening and cooling Diet, feeding on Meat that breeds good Blood, and thickens it; as are good Broths made with Poultry; Necks of Mutton, Knuckles of Veal, in which may be boiled cooling Pot-herbs; new lay'd Eggs, Gellies, Rice-Milk, Barly-broths, which are proper for her: Let her drink the Water in which Iron is quenched, with a little Syrup of Quince:...[104]

ILLNESS DURING PREGNANCY

Diet played a critical role in the treatment of any illness causing a fever. In that instance a thin diet diminished the fever. In pregnancy,

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[101] *Ibid.*

[102] Mauriceau, p. 85.

[103] Roeslin, p. 134; see also Mauriceau, p. 85

[104] Mauriceau, pp. 85-86.

if the fetus was not killed by the illness, the thin diet might well accomplish the same end. The diet must represent a compromise between adequate treatment of the illness, a thin diet, and adequate nourishment of the fetus, a full diet. During the third trimester this dilemma became most pronounced. The following represents the course pursued in this situation:

> As for Matter of Diet, it is not to women with Child in Acute diseases to be enjoyned to spare, lest the little Infant be famished; neither is it to be allowed so liberal, that the Feaver should be thereby strengthened; but we must steer a middle course, with this Caution, That in the first months of their Belly-burden, a thin Diet be enjoyned, and in the latter somwhat more solid and plentiful, because the Child doth then stand in need of more nourishment. Yet if there must needs be some error in Diet, it is better to err in keeping too ful, than to slender diet; for recovery is chiefly to be expected from the strength of the Mother, and the Child.[105]

The role of diet was critical in managing specific disorders during pregnancy. Several of these disorders, including vomiting, fluxes of the belly, and uterine distempers, could arise from dietary indiscretions. Others, such as pica and some cases of vomiting, seemed to result from humoral disorders brought on by pregnancy itself. Dietary treatment in these disorders included attempts to restore the humoral balance and to exploit the characteristics of specific foods to alleviate a dangerous condition, as with the use of rice in treating a dysenteria.

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[105]Rivière, Practice, p. 510; see also Culpeper, pp. 158-159, Book IV.

Section 6

CONCLUSIONS

In considering the role played by diet in the prenatal care of the sixteenth and seventeenth centuries, certain aspects stand out. Probably the most important of these is the objective of sustaining the pregnancy to produce a healthy baby and mother. According to the current edition of Williams Obstetrics this goal remains: "The objective of prenatal care is to insure as far as possible that every pregnancy culminates in a healthy mother and a healthy baby."[106] Our concept of a healthy baby includes the potential for maximal growth and central nervous system development. By focusing on results that can only be realized and evaluated years after birth, these goals imply an assumption that the threat of abortion, in most cases, is minimal. This was not the case three and four centuries ago when the possibility of miscarriage appeared to influence nearly every facet of prenatal care.

A comparison of the understanding in each period of the physiologic state of pregnancy best illustrates the nature of this difference. The neutral state, or sickness of nine months, implied a condition highly susceptible to a variety of situations dangerous to the mother and fetus. Today, although there still exist remnants of the earlier view in popular conceptions of pregnancy, obstetricians feel that "a priori pregnancy should be considered normal.... [even though] the myriad changes in the maternal organism

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[106] Louis M. Hellman and Jack A. Pritchard, Williams Obstetrics, 14th ed. (New York: Appleton-Century-Crofts, 1971), p. 332.

during pregnancy sometimes make demarcation between health and disease less distinct."[107]

The concern with the omnipresent threat of abortion was undoubtedly justified by experience. Forbes has determined the rate of "still-born" infants in sixteenth and seventeenth century London by collating this information from the record books of the Parish of St. Botolph. He speculates that stillborn included "fetuses dying at any time during pregnancy as well as at term."[108] These records also contained data on the death rate of chrisoms, or infants who died within the first month after birth. Many of these deaths likely reflect prenatal complications. The following table adapted from Forbes presents these rates:

	Death Rate per 1000 Christenings	
5-year period	Stillborn	Chrisoms
1584-88	123.5	159.7
1589-93	133.4	175.5
1594-98	105.5	150.7
1609-13	51.0	
1614-18	40.8	
1619-23	41.4	

The higher death rates from 1589-93 probably reflect the effect of the plague in 1592 and 1593. Comparable figures in the United States in 1963 are 23.0 fetal deaths regardless of gestational age per 1000 live births and 18.2 infant deaths within the first month of life per 1000 live births.[109]

This justified regard for miscarriage tended to produce a strong

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[107] Ibid.

[108] Thomas R. Forbes, Chronicle From Aldgate (New Haven: Yale University Press, 1971), p. 63.

[109] Forbes, pp. 61-70.

emphasis on diet as a preventive measure. The strong association between fetal nutrition, the stimulus for labor, and abortion certainly strengthened this prophylactic role for diet. Not only could a pregnant woman provide the necessary nutriments for her fetus, but she could also prevent humoral imbalance with a proper diet. It seems clear that sixteenth and seventeenth century authors believed that fluxes, constipation, and many instances of vomiting and uterine disorders, all of which resulted from humoral imbalances, could be prevented by following the proper diet.

The role of diet in treating some of the dangerous situations arising in pregnancy frequently consisted of trying to restore the humoral balance, which often had been upset by dietary indiscretion. In some situations, however, the special qualities of foods were utilized as well. The tendency of prunes, for example, to loosen the stool still remains an acceptable means of treating consitipation during pregnancy.[110]

In theory the dietary manipulations examined above appear to be consistent with the therapeutic objectives. One must question, however, the availability of the necessary foods in some instances. The recommendation of animal and fowl meats during pregnancy was probably not realistic for most peasants, who tended to obtain most of their protein from "white meats," or dairy products. In times of ample supply the normal intake of protein of a peasant appeared to be adequate by our present standards. Assuming a pregnant woman would increase her intake as the fetus grew, she would probably have provided it with reasonable nourishment by our standards.[111]

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[110] Hellman and Pritchard, pp. 340-341.

[111] J. C. Drummond and Anne Wilbraham, The Englishman's Food (London: Jonathan Cape, 1957), pp. 48-52, 74-77, and 465-467.

One can only speculate on the effects on the peasant woman's diet during pregnancy that resulted from the exclusion of white meats from the recommended prenatal diet.[112] The more affluent classes in England ate more meat and could have more closely followed the usual dietary advice during pregnancy.[113]

Another conflict between dietary theory and practice during this period arose when sickness occurred in pregnancy. As illustrated above by the higher death rates in plague periods, acute illnesses in this period tended to be devastating for the fetus. The fetus was further jeopardized by the clear broths and soups used to treat fevers. If continued over a week or more, this thin diet could impair the health of the fetus not only by ketosis but by lack of calories and protein.[115] The pessimistic outlook given to this situation by most authors reflected both the inability to treat infection effectively and the detrimental influence of the sparing diet on the mother and fetus.[116]

Seen within the rigid confines of the humoral theory of disease, the use of diet in prenatal management in the sixteenth and seventeenth centuries reflected a rational use of food in preventing and treating dangerous situations in pregnancy. Within this system diet represented the primary means to maintain humoral balance and to rectify states of imbalance. Given the conception of pregnancy as a finely balanced condition in a system that not only saw disease as the manifestation of humoral

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[112] Rueff, p. 68 and Hippocrates, p. 61.

[113] Drummond and Wilbraham, pp. 52-55.

[114] Rivière, Universal, pp. 340-341.

[115] "Nutrition in Pregnancy," pp. 67-68. [116] Rivière, Practice, P. 510.

imbalance, but also saw insufficient fetal nourishment as the stimulus to initiate labor, diet assumed the central role in prenatal care. The obstetrical literature of the time reflected this role by emphasizing the preventive nature of a proper prenatal diet in avoiding those situations that could lead to abortion. In addition it showed the important role diet assumed in treating medical disorders that could also lead to abortion.

BIBLIOGRAPHY

Aetius of Amida. The Gynecology and Obstetrics of the VIth Century, A.D. Philadelphia: The Blakiston Co., 1950.

Allport, Walter H. Some Seventeenth Century Obstetricians and their Books. New York: William Wood & Co., 1912.

Arbuthnot, John. An Essay Concerning the Nature of Aliments. 3d ed. London: J. Tonson, 1735.

Birch, Herbert G. "Functional Effects of Fetal Malnutrition," Hospital Practice, 6:134, March, 1971.

Boorde, Andrew. A Compendius Regyment. London: Thomas Colwel, 1542. Published for the Early English Text Society, London: N. Trubner & Co., 1870.

Burton, Robert. The Anatomy of Melancholy, ed. A.R. Shilleto. 3 vols. London: George Bell & Sons, 1896.

Committee on Maternal Nutrition, Food and Nutrition Board, National Research Council. Maternal Nutrition and the Course of Pregnancy: Summary Report. Washington, D.C.: National Academy of Sciences, 1970.

Culpeper, Nicholas. A Directory for Midwives. London: H. Sawbridge, 1684.

Cutter, Irving S., and Henry R. Viets. A Short History of Midwifery. Philadelphia: W. B. Saunders Company, 1964.

Dorland's Illustrated Medical Dictionary. 24th ed. Philadelphia: W. B. Saunders Company, 1965.

Drummond, J.C., and Anne Wilbraham. The Englishman's Food. London: Jonathan Cape, 1957.

Elyot, Sir Thomas. The Castell of Helthe. London: Thomas Bertheleti, 1541.

Findley, Palmer. "The Midwives' Books," Medical Life, April, 1935.

Forbes, Thomas R. Chronicle From Aldgate. New Haven: Yale University Press, 1971.

Galston, Iago (ed.). Human Nutrition Historic and Scientific. New York: International Universities Press, Inc., 1960.

Guillemeau, Jacques. Childbirth. London: A. Hatfield, 1612.

Hellman, Alfred M. A Collection of Early Obstetrical Books. New Haven: [n.n.], 1952.

Hellman, Louis M., and Jack A. Pritchard. Williams Obstetrics. 14th ed. New York: Appleton-Century-Crofts, 1971.

Hippocrates. Hippocrates on Diet and Hygiene, ed. John Precope. London: Williams, Lea & Co., 1952.

Jacobson, Howard N. "Nutrition in Pregnancy - A Critique," Journal of the American Medical Association, 225:634, August, 1973.

Langton, Christopher. An Introduction into Phisyche. London: Edward Whytechurche, 1549.

Mauriceau, Francois. The Diseases of Women with Child, trans. Hugh Chamberlen. London: A. Bell, 1672.

Moffett, Thomas. Helth's Improvement. London: Samuel Thomson, 1655.

"Nutrition and Pregnancy. An Invitational Symposium. I.," The Journal of Reproductive Medicine, 7:199-219, November, 1971.

"Nutrition in Pregnancy," The Medical Letter on Drugs and Therapeutics, 15:67-68, August 3, 1973.

O'Hara-May, A.J. "The Elizabethan Dietary Approach," Nutrition, 24: 4-12, 1970.

Pechey, John (ed.). The Compleat Midwife's Practice Enlarged. 5th ed. London: H. Rhodes, 1698.

Rivière, Lazare. The Practice of Physick. London: Peter Cole, 1665.

_____. The Universal Body of Physick. London: Henry Eversden, 1657.

Roeslin, Eucharius. The Birth of Man-kinde, trans. Thomas Raynald. London: A. H., 1626.

Rueff, Jacob. The Expert Midwife. London: by E. G. for S. E., 1637.

Sharp, Jane. The Compleat Midwife's Companion. 4th ed. London: John Marsall, 1725.

Singer, Judith E., Milton Westphal, and Kenneth Niswander, "Relationship of Weight Gain During Pregnancy to Birth Weight and Infant Growth and Development in the First Year of Life," Obstetrics and Gynecology, 31: 417-423, March, 1968.

Soranus of Ephesus. Gynecology, trans. Owsei Temkin. Baltimore: Johns Hopkins Press, 1956.

Tillyard, E. M. W. The Elizabethan World Picture. New York: Vintage Books, 1943.

Willughby, Percivall. Observations in Midwifery. Warwick: H. T. Cook and Son, 1863.

Winick, Myron. "Fetal Malnutrition," Clinical Obstetrics and Gynecology, 13:526-541, September, 1970.

_____. "Malnutrition and Brain Development," The Journal of Pediatrics, 74:667-679, May, 1969.

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