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PREVENTIVE MEDICINE IN OBSTETRICS*

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JOHN CLARENCE CUTTER, as has previously been mentioned, was born in 1851 and graduated at Harvard Medical School in 1877, after which he went to Japan as professor of physiology and comparative anatomy in the College of Agriculture in Saffara. Possibly the experience gained in the nine years he held this post strengthened his great belief in the part that preventive medicine might play in influencing the destiny of man. In his will he allocated half of the net income of his estate to the founding of an annual course of lectures on preventive medicine. I am proud to be, in this, the centenary year, the first obstetrician chosen to deliver a Cutter Lecture.

I propose to deal in this lecture with some of the environmental factors that affect the outcome of pregnancy, rather than with the effects of medical care and treatment during pregnancy or labor.

Reproduction is influenced by heredity and environment. The importance of heredity as a factor in reproduction is proverbial: "like father, like son"; "you cannot make a silk purse out of a sow's ear." There are fewer clichés about the effect of environment, although there is no doubt that reproduction is greatly influenced by custom, tradition, nutrition, standard of education and economic factors.

It seems reasonable to suppose that those who enjoy a high standard of living, — that is to say, good food, housing and education, — will show a higher standard of reproductive performance than those with a low standard of living. The Registrar General's reports in Britain provide a convenient starting-off place for studying death rates by standard of living. He has divided the population into five social classes. Social Class I comprises the more highly paid professional and business groups and Social Class V the casual and unskilled manual laborers. About 50 per cent of the population are in Social Class III, which includes the skilled craftsmen and lower-salaried professional and clerical groups. The classification depends on the social prestige of the occupation as well as on the rate of pay. Analysis of national figures shows that from

Social Class I to V there is a steady decline in the stillbirth and infant mortality rates. The influence of social gradient is least in the case of stillbirths and most in the period from one to twelve months. Deaths in the latter group are nearly all due to infection, and the mortality in this period has now been recognized as a very delicate index of environmental conditions. Any deterioration in living standards is reflected immediately in a rise in mortality in the period of one to twelve months. The relatively small difference in the stillbirth rate between the social classes might suggest that superior environment of those in Social Class I did not have much influence in improving reproductive performance. I should like to examine this problem more closely by describing some of the results of our own work on this subject.

The City of Aberdeen is particularly suitable for social research in obstetrics, since there are about 3000 births per annum, a convenient number to handle. The population is genetically fairly uni-

TABLE 1. *Stillbirth and First-Week Neonatal Death Rates Per 1000 Births in Two Contrasted Groups of Booked Married Primiparas (Twins Excluded).*

	ABERDEEN MATERNITY HOSPITAL 1949-1950 (1792 CASES)		PRIVATE NURSING HOME 1946-1950 (1026 CASES)	
	Stillbirth	Non- neonatal Death	Stillbirth	Non- neonatal Death
Full term	10.0	5.6	7.8	8.8
Premature (5½ lb. or less) ..	12.3	8.9	9.7	1.0
All infants	22.3	14.5	17.5	9.7

form; very little movement in and out of the city occurs; and there is only one hospital group. We have studied primigravidas in the first place; 95 per cent of patients having a first baby are confined in hospital, 85 per cent being free (hospital) patients and 10 per cent private (nursing home) patients. The private patients are confined in a former private dwelling house converted for this purpose with a very few minor structural alterations. The total cost to the patient is between £30 and £60.

*The Cutter Lecture on Preventive Medicine, delivered at Boston, October 15, 1951.

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The others are confined in the large teaching hospital and pay no fees. Table 1 shows that both the stillbirth rate and the neonatal mortality are less in the private patients. In the case of neonatal mortality this is due entirely to the very small death rate in premature babies. Table 2 gives a separate analysis of the age group twenty to twenty-four, which emphasizes still further the difference in mortality between these two social groups. The

TABLE 2. *Stillbirth and First-Week Neonatal Death Rates Per 1000 Births Among Booked Primiparas Aged 20 to 24, in 2 Contrasted Groups (Twins Excluded).*

	STILLBIRTH	NEONATAL DEATH (FIRST WEEK)	OBSTETRIC DEATH
Aberdeen Maternity Hospital 1949-50 (900 cases)	22.2	16.7	38.9
Private Nursing Home 1946-50 (198 cases)	10.1	5.1	15.2

over-all prematurity rate (babies of five and a half pounds or less) was 5.6 and 8.2 per cent in the private and hospital groups respectively. Figure 1

FIGURE 1. *Percentage of Babies Weighing 5 1/2 Lb. or Less Born to Hospital and Private Primiparas.*

shows that in the hospital group a much bigger proportion of the babies were under four pounds in weight and that the deaths occurred in those light babies, whereas in the private patients very few were under 4 pounds in weight. The contrast between the two groups is even more striking when the comparison is made by weeks of gestation (Fig. 2). In the hospital group, 14 of the 18 deaths occurred when the pregnancy had lasted less than thirty-six weeks. In the nursing-home group there was only 1 death among 1043 consecutive premature

births. It is clear, therefore, that age for age the primigravidas in private practice are much more efficient, when judged by fetal mortality, than the hospital patients. The relatively small difference in the total stillbirth rate and neonatal mortality is

FIGURE 2. *Analysis of Babies Weighing 5 1/2 Lb. or Less Born to Hospital and Private Primiparas, by Gestation Period.*

due to the unfavorable age distribution in the private patients. The difference is not explained by a higher standard of medical care; in fact, the reverse is the case. There are no facilities for the treatment of premature babies in the nursing home,

FIGURE 3. *Fetal Mortality, According to Height, in Hospital and Private Primiparas.*

and on the rare occasions when a premature infant requires special attention it is transferred to the Prematurity Unit at the hospital.

We must now consider the explanations for this difference. Even casual inspection of the two groups shows that the private patients look healthier than the hospital group — and they are certainly taller. For example, the percentages of primigravidas under 5' 1" in height are 5 and 25 in the nursing home

and hospital patients respectively. There should, therefore, be a negative correlation between height and high fetal mortality. Figure 3 gives the fetal mortality* by height in primigravidas, and it shows that in both groups the fetal mortality falls as the height of the patient rises. In the private group the fetal mortality in women between twenty and twenty-four years of age and 5 feet 4 inches tall or more reaches the very low figure of 11.5 per 1000. If tall women are more efficient than small women it must be because they are healthier and not simply because they are taller, since height alone should not confer any particular advantage. This implies that many women are small not because of heredity but because they are stunted and not fully grown — possibly as a result of faulty living conditions and deficient diet in the growing years. It seems a reasonable supposition that if stunting of the skeleton occurs, the body will generally be underdeveloped and will function at less than maximum efficiency and thus reproductive performance, along with other activities, will be adversely affected.

The effect of poor nurture in inhibiting the full expression of nature has received too little attention from geneticists and plant and animal breeders. The following two examples, one from the vegetable and the other from the animal kingdom, taken from an article by Leitch†, illustrate the effect of varying environment. If a dandelion is grown in a poor soil and in a cold climate it looks small and stunted, whereas in a fertile soil and at a higher temperature it grows tall and slender, with large green leaves. If the dandelion were an important food plant, the big succulent variety grown from the fertile soil would obviously be preferred, but since it is not, the question is possibly not of much account. Exactly the same happens if the edelweiss is transported to a low-lying fertile soil, but in so doing it loses the attractive gray coloring for which it is famous. It stretches out and becomes green and leafy; hence from the aesthetic point of view the fertile soil is a poor environment, no matter how good it may be from the point of view of growth.

The original wild pig at full growth is in shape more like the "improved" pig at birth than at maturity. That is to say, it has a relatively large head and a badly developed hind end. The characteristics that are valued by the farmer who sells the bacon are those that develop last, since the most prized parts are the loin and the hindquarters. From the commercial point of view, therefore, the rich diet and the protection from exposure, cold and damp afforded the domestic pig constitute a favorable environment. If a pig is underfed for the first half of its life and then given full rations it will put on weight, but the skeleton and muscles will not grow as they would have done if they had had

the opportunity at the right time, and the extra food given will be laid down mainly as fat.

It appears, therefore, that growth potentials cannot be accelerated or slowed down at will. If we do not use these full potentials all the way along we will not obtain full development. The animal may attain the same ultimate weight, but the carcass will be different in shape and in composition. The well-grown pig will have the correct frame of bone and muscle to which the "finish" of fat can be added. Figure 4 shows the changes in shape that occur in man during growth. Essentially these are the same as in the pig, the hindquarters maturing last. If we retard the rate of growth sufficiently

FIGURE 4. *Change in Proportions of Human Body During Development (Stratz).*

we obtain not only a small adult but an underdeveloped one, with normal or nearly normal-sized head, moderately retarded trunk and relatively short legs. In a dietary and clinical survey carried out in Aberdeen by the Carnegie United Kingdom Trust during the years 1937-1939, children were grouped according to the family expenditure on food per head. Height at the iliac crests was used as a means of measuring leg length, along with the height and weight, to find out which indicated most reliably the income group to which the child belonged. It was found that the cristal height was better than the total height for indicating the food-expenditure group; for children under twelve years of age, height was a better index than weight. Therefore, children coming from the higher income groups, in which the expenditure on food is greater, are characterized by their longer legs. The consciousness of this difference is universal and colors both literature and art. If the heroine is small it is expressly stated that she is "perfectly proportioned." Many modern works of art depict young women as having long, slender legs; in clothing advertisements in women's magazines the model is invariably tall and slender, with unbelievably long legs.

Since the legs suffer most in underdevelopment, their elongation and perfection of shape become the symbol of perfect growth, and since this is more likely to be achieved only in the best environment the length of leg comes to have some social signifi-

*"Fetal mortality," as used in this paper, is the stillbirth rate plus the death rate among babies prior to discharge from hospital.

†Leitch, I. Growth and health. *Brit. J. Nutrition* 5:142-151, 1951.

cance. That there is a close relation between height and social class can be seen by the following analysis (Fig. 5) of primigravidas in Aberdeen by height and social class of the patient's father. This has been used in preference to the social class of her husband, as it gives a better idea of the environment in which the patient has grown up. The

FIGURE 5. Analysis of Primigravidas in Aberdeen by Height and Social Class of Father.

figures show that as the environment deteriorates the percentage of small women increases. Figure 6 gives an analysis by height and occupation of the patient before marriage. It shows the same trend — namely, that as the social prestige of the job falls

FIGURE 6. Analysis of Height of Primigravidas by Occupation Prior to Marriage.

so also does the height. Thirty-seven per cent of fish-workers are small (under 5 feet 1 inch). Fish work consists of standing in exposed sheds, cleaning and packing fish. It is hard and not very remunerative work, performed under rather disagreeable conditions, and it calls primarily for an ability to rough it. Figure 7 is an analysis of the height of primigravidas by age at the birth of the first child and by social class of the father. It shows that in

women under twenty-five years of age the usual gradients of height can be seen, but in those over twenty-five years of age there are almost as many tall women in Social Classes IV and V as in I and II. The average size of the family of upbringing in Social Classes IV and V in this series was 2.5 children in those over twenty-five years of age, as compared with 5.5 in those under twenty-five years. From this it seems that parents in Social Classes IV and V who have small families can give their children a reasonably good education and good food, so that they grow tall and adopt the social habits of those in the upper social classes — one of which is to postpone the age of childbearing. In a group of 108 women medical students at the University of Aberdeen 58, or 53 per cent of the students, come

FIGURE 7. Analysis of Height of Primigravidas by Age at Birth of First Child and Social Class of Father.

from Social Classes I and II, and since in 1947 in Scotland only 12.6 per cent of the population belonged to these social classes, the students are obviously a privileged group. It is not surprising, therefore, that only 1 (1.7 per cent) was under 5 feet 1 inch. The environment in this group was probably optimal, since the parents would be of above average intelligence and have enough money to provide an abundance of food, good living conditions and good medical care.

Although there were more small women (6 per cent, or 3 out of 50) when the parents belonged to Social Classes III, IV or V, the relatively small percentage of short women suggests that lack of money does not of itself prevent good growth if the parents are ambitious enough to wish their children to go to a university. To do this, of course, they must limit the size of the family; this is confirmed by the fact that the average size of the family of upbringing was 2.4 children in this group.

To test more exactly our impression that tall women are on the whole much fitter and more co-

operative and knowledgeable than small women, we have for some time been grading the hospital patients into one of 5 physical and functional classes, the assessment depending on the result of an examination carried out by the obstetrician at the time of the patient's first visit to the Antenatal Clinic. Generally speaking, the physical and the functional gradings were quite closely correlated, although in some very young patients the physical grading was higher than the functional — presumably because they still retained the "bloom" of

TABLE 3. *Obstetric Death Rates Per 1000 Births, by Maternal Height and Physical Grade, in 1792 Aberdeen Maternity Hospital Booked Primiparas (Excluding Twins).*

PHYSICAL GRADE	TALL (5'4" AND OVER)	MEDIUM (5'1"-5'3")	SMALL (UNDER 5'1")	ALL HEIGHTS
Very good (A)	17.1	29.4	64.5	28.2
Good (B)	41.4	41.7	34.5	40.1
Fair (C)	17.1	26.7	37.2	28.0
Poor, very poor (D and E)	50.0	80.6	92.3	81.6
All grades	28.1	34.6	50.9	36.8

youth. Table 3 shows that those in the lower physical grades have twice as high a fetal mortality as the others. In each height group, the poorer physical grades have a higher fetal mortality. Tall women and those of good physical grading have less than average prematurity. Table 4 shows that the prematurity rate is twice as high in those of poor physical grade as in the rest, and that the prematurity

TABLE 4. *Prematurity Rates (Per Cent), by Maternal Height and Physical Grade, in 1792 Aberdeen Maternity Hospital Booked Primiparas (Excluding Twins).*

PHYSICAL GRADE	TALL (5'4" AND OVER)	MEDIUM (5'1"-5'3")	SMALL (UNDER 5'1")	ALL HEIGHTS
Very good (A) . . .	6.0	7.4	12.9	7.4
Good (B)	7.1	8.7	6.0	7.7
Fair (C)	8.5	5.0	12.2	7.8
Poor, very poor (D and E)	—	19.4	16.9	15.6
All grades	6.3	7.7	11.3	8.2

rate is higher in small than in tall women. The relation between physical grading and breast feeding was also studied; in primigravidas aged twenty to twenty-four, the incidence of bottle or partial bottle feeding rose steadily from 10 per cent in the highest physical grade to 26 per cent in the lowest. Follow-up one month later showed that the rate of failure at this stage was also greater in those in the low physical grades.

Despite the fact that health and physical fitness might be expected to deteriorate with increasing age, our finding is that the very young women (under twenty years) are on the whole poorer physical specimens than the older women. In the

age group fifteen to nineteen, the incidence of small women under 5 feet 1 inch is higher than in any of the other age groups. Although most of the young women in the age group fifteen to nineteen are either eighteen or nineteen years of age when they become pregnant and have probably stopped growing, a few may not. That a few may not have stopped growing is not sufficient to account for the fact that there are more small women in the age group fifteen

TABLE 5. *Influence of Height and Physical Grading on Conjugate Diameter of Pelvic Brim in 100 Tall and 100 Small Women (Bernard, 1952).*

HEIGHT	CONJUGATE DIAMETER OF PELVIC BRIM		ALL GRADES OF PHYSICAL HEALTH
	GRADE I PHYSICAL HEALTH	GRADE II PHYSICAL HEALTH	
	cm.	cm.	cm.
Tall (5'5" and over)	12.80	12.33	12.69
Small (under 5'0") . . .	11.01	10.71	10.77
All heights	11.90	11.50	

to nineteen. If women who had a first baby between the ages of fifteen and nineteen years are measured years later they are still found to be, on the average, smaller than those who had their first child at a later age. The fact is that women who have their first child before the age of twenty come, generally speaking, from the lowest economic groups and are therefore very stunted.

The fact that most of the small women are stunted received some confirmation from a study of the shape and size of the pelvis. Not unexpectedly, the size of the pelvis increases with the size of the patient. This is seen from Table 5, which shows the length of the anteroposterior diameter of the pelvic brim by height in a series of 100 tall and 100 small

TABLE 6. *Percentage Distributions of Pelvic-Brim Shape (Nicholson's Classification) by Maternal Height and Physical Grading (Bernard, 1952).*

	ROUND OR LONG- OVAL BRIM SHAPE %	FLAT OR TRIANGULAR BRIM SHAPE %	ALL BRIM SHAPES %
Tall			
Grade I	94.8	5.2	100
Grade II	87.5	12.5	100
Small			
Grade I	73.6	26.4	100
Grade II	63.0	37.0	100

women who were examined by x-ray pelvimetry. The shape is also affected by height. Table 6 shows that the shape is affected by the size of the patient and by her physical grading. In each height group there is more flattening in those of poor physical grade. The assessment, although partly an estimate of the state of health at the time of pregnancy, also takes physical development into account, thus giving some indication of the childhood environ-

ment. In our experience cesarean section for disproportion is only occasionally necessary in women between 5 feet 1 inch and 5 feet 3 inches tall and almost never necessary in those of 5 feet 4 inches and over. It is clear, therefore, that from the point of view of fetal mortality, prematurity and lactation it is greatly to the advantage of the patient to be tall and to have high physical grading. These advantages are to some extent neutralized or obscured by the age factor when social groups are studied. The fetal mortality rises with age from twenty-five years, and the incidence of prolonged labor and instrumental delivery rises steadily from the age of twenty. It happens also that those in the worst physical condition and those brought up in the poorest homes marry and have children sooner than those who are healthy and tall and who as a rule come from good homes. This explains the small difference in fetal mortality in the two contrasting social groups that were mentioned earlier in this paper when primigravidas of all ages were compared. It also explains why a single age group must be studied before the superior performance of the upper economic groups can be demonstrated.

AGE AND CHILDBEARING

So far we have been examining the effect of environment of fetal mortality, and it seems clear that a good environment, resulting in good health, means better reproductive performance. We have shown that the superiority is somewhat obscured by the fact that women from a good environment are usually older at the time of the first birth than those brought up in a poor environment. We shall now

FIGURE 8. Effect of Age on the Various Causes of Fetal Mortality.

discuss the influence of age on childbearing in more detail. Figure 8 shows the effect of age on the various causes of fetal mortality in a group of 9790 booked primiparas, and Figure 9 shows the relative importance of some of these causes of fetal death in each age group. In the age group fifteen to nineteen the most important causes of fetal death are toxemia, fetal deformity and prematurity. In the age group thirty to thirty-four, — a group to which

many in Social Classes I and II belong, — these causes are relatively unimportant when compared with birth trauma and unexplained intrauterine death at or about full time — causes that in the

FIGURE 9. Relative Importance of Some Causes of Fetal Death, by Age Group.

younger age group are relatively unimportant. Figure 10 shows that youth is an important factor in labor. A spontaneous delivery by the vertex in less than twenty-four hours seems to be a reasonable definition of normal labor. The incidence of

FIGURE 10. Type of Labor in "Booked" Primiparas, by Age.

such deliveries among primigravidas in the present study fell from 80.7 per cent in the age group fifteen to nineteen to 26.6 per cent in those of thirty-five years or more. Conversely, the percentage of labors lasting forty-eight hours or more rose from 2 per cent in the youngest to 8.6 per cent in the oldest age group. The incidence of forceps delivery and cesarean section rose steeply with age, demonstrating very strikingly the great advantage of youth in ensuring an easy and short labor. In the management of a labor likely to end spontaneously, an episiotomy is preferred only if it seems probable that the perineum is about to tear. The incidence

of intact perineums in those primiparas who had a spontaneous delivery fell from 55 in the fifteen-to-nineteen age group to 36 per cent in those between twenty and twenty-four. The young women seem able, therefore, to stretch the perineum without tearing and without the necessity for an episiotomy much better than those who are only a few years older. The only serious difficulties encountered in labor in the fifteen-to-nineteen age group result from a contracted pelvis. If the pelvis is grossly contracted an obstructed labor will occur even in the presence of the most efficient uterine contractions and bearing-down efforts. In the older age groups, difficult and prolonged labor frequently occurs, in the absence of contracted pelvis or occipitoposterior positions, as a result of disordered uterine action and inability to bear down effectively in the second stage. Not

First of all, after my child's birth I was extremely weak and never recovered my full strength until three years after. No one likes to be a semi-invalid, and that was what I was, in fact it was ages before I could push my baby's pram any distance, and it was an effort to stand up straight. Before my baby was born I was very healthy and seldom had anything wrong with me, apart from a cold, and I could count the days I have been in bed on one hand since I left school. Health is very precious and worth more than anything else.

I do think that if I had a little more assistance when I was in labour I wouldn't have been so weak after it.

You call it a spontaneous birth. I do not know what that means, but I felt at the time I didn't have enough strength to go on so long. Pain is nothing. One can put up with that. There is a lot to be said for the old-fashioned doctors. I am sure they would have been a lot more helpful.

So for the sake of all the mothers-to-be, about 35 years old to 40 years, be a little more considerate of them. Our bones are set, I think, especially if we lead a strenuous life — dancing, cycling, and hiking, etc. and you will have a lot more babies.

I intended to have more, but not now.

Excuse criticism, but I feel very strongly about it.

TABLE 7. *Follow-Up in 1950-1951 of Cases of Difficult First Labors (1938-1947).*

	AGE UNDER 25 (574 CASES)	AGE 25 AND OVER (604 CASES)
	%	%
No further pregnancy.....	20.4	39.9
Reasons for no further pregnancy		
Widowed or divorced.....	2.1	3.1
Ill health.....	1.2	2.3
Fear of labor, neurosis.....	2.6	6.3
"Too old".....	—	2.7
Financial reasons.....	1.6	3.6
Social reasons (mainly housing).....	5.6	7.1
Voluntary, ? cause.....	5.2	8.3
Involuntary.....	1.9	4.5
Miscellaneous other reasons.....	0.2	2.0

only do the older women have a more difficult labor, but the effect on the patient is much more pronounced and lasting. In a series of 1178 primiparas having a difficult first labor between the years 1938 and 1947, the percentages of those who had no more children when followed up in the years 1950-1951 were 7.4, 20.6, 26, 46.9 and 73.2 in each five-year age group respectively. The average was 29.4. Table 7 shows that those who are over twenty-five years of age at the time of the birth of the first child are twice as likely to have no more children than those under twenty-five. A glance at the reasons for this shows, as one would expect, that involuntary sterility is higher in the older women and that some thought they were too old to have any more. Many more deliberately refrained from having another child. In some the reason for this was not clear, but fear of labor and general over-anxiety were much more common in the older age groups. Some talked about the terrible ordeal they had endured, when in fact the labor was more or less normal. The following letter is an example:

I have had no other child since 14.9.46 and have no intention of having another one if I can help it (touch wood). I am certainly taking all precautions and my husband agrees with me in this matter.

In this case, the labor was classified as difficult only because it lasted thirty hours. During the first twenty-four hours the pains were very slight, and when pains were properly established the progress was rapid and delivery spontaneous.

Housing and financial worries were also more frequently given as a reason by the older women despite the fact that, on the whole, their social circumstances are much superior to those of the younger women. They are also much more concerned about maintaining standards and giving their one child "every advantage."

CONCLUSIONS

The evidence of this research shows that much inefficiency in reproduction is the result of impaired growth and health and of deterioration associated with aging. Since the well-to-do tend to be healthy and well grown but to reproduce late and the poorer classes to be less healthy but to reproduce early, the social differentials are not clear-cut unless the age factor is taken into account. It is clear that good physique, health and education and early marriage are ideal for efficient reproduction. The two main problems in preventing reproductive inefficiency are the improvement of social conditions, so that stunting of growth and malnutrition decrease, and the removal of barriers to early marriage among those who already live in a good environment. Great progress toward solving the first of these problems has been made in Britain since 1938 — a progress that is the more remarkable because it took place during World War II and its aftermath.

Social improvement must be guided by continued research. It is of great importance to discover how far the rise in fetal mortality and the incidence of disordered uterine action that are associated with age are inevitable and how far the process of aging can be retarded by the provision of a suitable environment.

In this connection, it is also necessary to consider how far an environment that is suitable for full physical and intellectual development is compatible with race survival. This problem becomes more important as the standard of living rises and the family is more and more planned. The present trend among educated persons is to reduce the number of children in the interests of a still higher standard of living for these children, until this group of society fails to reproduce itself. Since professional women tend to marry professional men, they are likely to have children with intelligence above the average, but in the present state of society many of them postpone starting a family and then restrict the total number of children to an extent that ensures a decline in this valuable population. From the strictly obstetrical point of view, difficult labor is a sig-

nificant contributory factor in the decision to limit the family, though not the most important one. Research should therefore be directed toward determining the cause of prolonged labor due to disordered uterine action.

I trust that I have succeeded in demonstrating the importance of a preventive outlook in obstetrics. The relatively high fetal mortality and prematurity rates associated with poor health and the high incidence of difficult labor found in elderly primiparas can be mitigated but cannot be satisfactorily dealt with, even by the highest standard of obstetric art and skill.

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