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Lifestyle in Pregnancy

SUMMARY

While there is little doubt about the association of lifestyle and pregnancy outcome, there is considerable doubt about the net value of lifestyle adjustments during pregnancy. Advice alone on nutrition, sexual activity, alcohol and smoking in pregnancy has not been demonstrated to improve outcome, and may, in itself, have adverse effects. Beneficial effects may occur when advice is accompanied by a program of social support. (Can Fam Physician 1984; 30:2127-2130).

SOMMAIRE

Bien qu'il ne subsiste que peu de doute quant à la relation entre le mode de vie et son influence sur le résultat de la grossesse, on questionne énormément la valeur nette, pendant la grossesse, des changements au niveau du mode de vie. On n'a pas démontré qu'à eux seuls, les conseils sur la nutrition, l'activité sexuelle, la consommation d'alcool et le tabagisme pendant la grossesse ont amélioré la situation et qu'ils présentent en soi des effets adverses. Certains effets bénéfiques peuvent se manifester lorsque les conseils s'accompagnent d'un programme de support social.

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"The most common form of remedy offered to pregnant women comes in the guise of 'advice'. However, this is no ordinary advice, there being no option of refusal." [1]

THE ASSOCIATION between poor health outcomes and undesirable lifestyles generally leads well-meaning physicians to 'improve' these outcomes by advice to alter lifestyle for the better. At times, the response to our advice is encouraging; on other occasions, the results fall far short of our expectations.

The pregnant woman is a particularly favored and susceptible target for that advice. She is specially concerned not only for her own wellbeing, but for that of her unborn child. She is relatively young, perhaps not yet fixed in her habits, and thus capable of change. In addition, because she is generally well, we often have little else to offer her at antenatal visits.

A large part of antenatal care is made up of advice—on diet, hygiene, activities and habits. We tell the pregnant woman to get plenty of rest, and plenty of exercise; what to eat and what not to eat; how much weight she should or should not gain. We tell her when she can have coitus, orgasm, both, either or neither, and which of life's other pleasures she may continue or must abjure for the duration of her pregnancy. We have no shortage of advice for her. Unfortunately much of that advice is inconsistent, based on unsupported opinion or conflicting evidence, and potentially capable of causing harm as well as good.

The importance of health habits can scarcely be denied. Unless a pregnant woman looks after herself, no one else can look after her. However, we must be careful to avoid the simplistic belief that advising a woman to look after herself is the solution to further improving the outcome of pregnancy.

Advice on lifestyle, to be appropriate, must satisfy three fundamental criteria. First, that if the advice is followed, it will lead to benefit. Second, that it is likely to be followed. Third, and most important, that whether our patients comply with our advice or not, the giving of that advice in general will do more good than harm.

In this paper we review some of the lifestyle prescriptions and proscriptions that have been used in the past and are used today for pregnant women. On what evidence are these prescriptions and proscriptions based? What side effects may they have? As examples, we will look at four areas to which a great deal of attention has been paid in recent years; diet and weight control, sexual activity, alcohol intake and smoking.

Nutrition

Despite the fact that diet is clearly a

major determinant of postnatal growth, little is known about how, or how much, the mother's diet during pregnancy affects the growth and well-being of the fetus. This lack of knowledge has not prevented professionals from giving specific advice throughout the centuries. Hippocrates advised that "dry foods are more adapted to the softness of woman's flesh, and are better for the womb and pregnancy". He also suggested that "food and drinks that are not quite so good are to be preferred".[2] On the other hand, some professionals advocated a more liberal approach. Magnus, a 13th century monk, cautioned that "to deny the pregnant woman any food she may desire might cause the unborn child to die of weakness".[2]

Obstetricians in the 19th century advised restriction of weight gain during pregnancy in the hope of making smaller babies and achieving vaginal delivery in cases of contracted pelvis.[2] In the 1920s, observations of the weight gain seen in toxemia led obstetricians to advise weight restriction to prevent eclampsia. An era of dietary restriction, especially of protein and salt, began, extending to the 1960s and even to some degree today. More recently, many nutritionists have advised a high calorie, high protein diet to achieve maximal increase in fetal weight and development.[3]

At least 17 controlled trials of dietary supplementation in pregnancy have been undertaken.[4] Eight of these showed a decrease rather than an increase in birthweight in the supplemented group compared to the controls. Seven of the eight studies in which over 20% of the dietary calories were protein showed a decrease in birth weight in the supplemented group.

The only real conclusion we can come to from these studies is that the relationship of pregnancy outcome to diet is a complex one. Contrary to much current opinion, it appears that excessive dietary protein may be harmful and should be avoided. No consistent benefit from dietary advice, restriction or supplementation has been observed, and the possible adverse effects of such dietary constraints have not been investigated. Hytten[5] wisely observed that the "the obvious ability of the pregnant woman and her fetus to weather the gamut of nutritional hazards, from crop failure to obstetrical advice may well be due to the physiologic changes in her metabolism which make her more resilient to deprivation, and her fetus less vulnerable than hitherto has been believed". Except in situations where there are specific indications for intervention, perhaps her appetite may well be the best guide to her requirements.

Sexual Activity

"Marital relations are to be restricted, particularly near the menstrual dates, and are strictly interdicted where there is a tendence to abortion. All relations should be positively forbidden during the last months of gestation. Non-observance of these rules may cause abortion, premature labor and puerperal infection".[6]

Advice about sexual activity in pregnancy has softened somewhat over the years. Williams' classic text in its sixth and tenth editions suggest that "in healthy persons sexual intercourse in moderation usually does no harm . . . but should be forbidden in the last months of pregnancy". By the 12th edition it admits that "even in the last weeks it probably exerts less deleterious effects than was formerly feared".[7, 8, 9]

Retrospective studies have shown an association between frequency of coitus,[10] orgasm[11] and preterm labor. It is difficult to argue that this association is more than coincidental. Sexual activity generally declines in the last weeks of pregnancy, making it more likely that a woman in preterm labor will have had recent intercourse than one who gives birth at term.

Naeye,[12] analyzing the data of the NICDS collaborative perinatal project, found an increase in chorioamnionitis in women who had more frequent intercourse before labor. Postulating that this infection may be caused by organisms carried in the semen, Naeye and Ross[13] prospectively studied two groups of couples, one who agreed to use condoms during coitus in pregnancy, another who did not. Preterm labor and inflammation of the membranes was less common in the group using condoms. The results of this prospective study are of great interest, but the differences in outcome observed may be due to inherent differences between those who chose to comply with the advice to use condoms and those who did not, rather than an effect of the condom use per se.

The adverse effects of advice about coitus during pregnancy have not been investigated. Williams 14th edition[14] comments bluntly about one such effect: "It has long been the custom of many obstetricians to recommend abstinence from intercourse during the last four to six weeks of pregnancy, a recommendation undoubtedly not carried out in many instances. On occasion the couples' drive in the face of the admonishment against intercourse late in pregnancy has led to sexual practices with disastrous consequences. Aaronson and Nelson, for instance, describe fatal cases of air embolism late in pregnancy as a result of air blown into the vagina during cunnilingus." Less dramatic, but more common, may be cases of marital friction and disharmony caused either by sexual abstinence or guilt.

Alcohol

The association between alcohol and suboptimal mental development has been known for a long time. Aristotle stated that "foolish drinking and hare-brained women for the most part bring forth children like themselves".[15]

Controlled experiments have established that heavy maternal alcohol consumption during pregnancy causes reduction in birthweight and an increased incidence of congenital abnormalities.[16] Similarly, in humans consistent association has been seen between heavy alcohol consumption and increased rates of spontaneous abortion, fetal growth retardation, and mental retardation, as well as a specific dysmorphic syndrome.[17]

The risks of adverse outcomes with alcohol consumption in pregnancy are dose related. Heavy drinkers who reduce intake in pregnancy reduce their risks.[18] Ingestion of as little as one ounce of alcohol per day carries some danger.[19] Whether smaller amounts carry any risk remains to be determined. No harmful effects have as yet been reported. Only with total abstinence can a woman be sure to be free of any possible hazard of harmful effects of alcohol ingestion. The present state of our knowledge does not justify giving such advice.

Abstinence is certainly easy to preach, but for some it may not be easy to practice. No controlled studies of the risks or benefits of alcohol advice in pregnancy have as yet been un-

dertaken. Until this is established, women have the right to complete and current information to aid their personal decision making. Smithell's advice of 1979[20] is perhaps still valid: "For the fantasiacs who demand guarantees, total abstinence throughout pregnancy probably combines scientific with poetic justice. For the realists, who recognize that life is a series of subconscious computings of benefit/risk ratios (crossing the road, eating out, getting married) a little of what they fancy will do them good, and is very unlikely to do their fetuses any harm".

Smoking

The fact that women who smoke cigarets during pregnancy have lighter babies than similar women who do not smoke has been consistently seen in over 50 studies, including over half a million births.[21] The difference in weights was found to be from 150-300 grams, and the risk of having a low birthweight (less than 2500 g) baby was twice as great for smoking as for non-smoking mothers. The incidence of low birthweight increases with numbers of cigarets smoked[22] and is the same in those who stop smoking in pregnancy as in non-smokers.[23]

Smoking is also associated with other adverse reproductive outcomes. Case control studies have shown that the risk of spontaneous abortion for smokers was 1.8 times that for non-smokers,[24] and of preterm birth 1.1 to 1.5 times as great.[25] Some large series have shown an increased risk of perinatal mortality in the offspring of smokers, although many other series fail to show this association.[21]

Although there seems to be no difference in immediate morbidity (as evidenced by Apgar scores) between the newborns of smokers and non-smokers, later morbidity seems to be much higher for the children of smokers. This includes risk of sudden infant death syndrome, increased hospital admissions and more diagnosis of bronchitis, pneumonia, injuries and poisoning.[21] Long term deficits in stature and mental functioning of smokers' children have been reported.[26]

These adverse effects, however, cannot be attributed solely to smoking. Smokers differ from non-smokers in many environmental, behavioral and biological variables. The woman who smokes during pregnancy is more likely to be of lower socioeconomic class, to be an urban dweller, and to be lighter in weight than the non-smoker. She also drinks more coffee, beer and whisky, has had less schooling, and received less prenatal care.[27, 28] Studies which correct for these confounding factors still show an independent (although much weaker) association with smoking, but the differences in outcome may be attributable to those and other known or unknown differences between the smoking and non-smoking subjects.[29, 30]

Randomized controlled trials will be needed to find out whether anti-smoking intervention can ward off adverse outcomes. Two such trials have been reported, with conflicting results. Donovan[28] was unable to show a significant effect on birthweight between controls having routine care and women receiving individual anti-smoking advice, despite the fact that the number of cigarets smoked in the intervention group was only 56% of that in the control group. However, Sexton and Hebel[32] were able to achieve a statistically significant difference of 92 g in birthweight in favor of their intervention group.

The intervention used by Sexton and Hebel was a massive one, perhaps impractical to implement on a major scale. Each woman received at least one home visit and often more, supplemented by frequent telephone and mail contacts. It was conducted by two women, both with master's level education. One had experience in pregnancy counselling, the other in smoking intervention. In addition to assistance to stop smoking through encouragement, information, practical guidance and behavioral strategies, it provided personal attention and individual support. It would be reasonable to argue that the key factor in the improved outcome demonstrated in this study may have been the intensity of the interaction between the pregnant woman and the therapist, and the non-specific benefit the pregnant woman would get from this support and interest in her welfare, rather than the smoking reduction per se.

It is clear from this study that a successful anti-smoking program can improve health outcomes during pregnancy. It is not clear whether the improvement is sufficient to outweigh the possible adverse effect of anti-smoking advice, particularly if that advice is not accompanied by the successful social support manifested by Sexton and Hebel.

Adverse Effects

Apart from the physical side effects of weight loss from high protein diets, the possible adverse effects of lifestyle advice remain largely unaddressed. There is some evidence, however, that anti-smoking advice may increase stress and anxiety in pregnant women, particularly if it is unsuccessful.[33] It is naive and wrong to assume that a pregnant woman who fails to comply with our advice is either ignorant of the supposed consequences of her actions, or selfish and irresponsible.

Actions contrary to medical advice may derive from a different assessment of the evidence, with reliance on personal experience rather than the wisdom of so-called experts. ("My cousin smoked all her pregnancy and had a nine pound healthy baby"). Sometimes apparently unhealthy behavior may be important to a woman's ability to cope with the stress of pregnancy. For us to seize on the vulnerable time of pregnancy as a moment to induce lifetime changes at the expense of possible lifetime guilt seems cruel indeed.

The Future

The studies presented suggest that mere advice about lifestyle in pregnancy is seldom effective in altering behavior, and not effective in altering the outcome of pregnancy. However, studies of anti-smoking advice[32] and enhanced antenatal care[34, 35] which were accompanied by social support have shown significant effects on outcome, particularly birthweight.

Later this year, one of us (RLB) will begin a randomized controlled trial examining the effectiveness of lifestyle advice (smoking and alcohol), given in the home and accompanied by social support from midwives, on the incidence of preterm birth. The relative contributions of changes in smoking, alcohol consumption and social support to the observed effect will be measured. This study may shed some light to the question of what is the important aspect of lifestyle advice in pregnancy.

Conclusions

There is considerable doubt about the net value of lifestyle adjustments in

pregnancy—enough doubt to preclude vehement exhortations for any particular adjustment. Women in pregnancy deserve to be informed of what is known about the possible adverse effects of poor nutrition, sexual activity, alcohol and smoking during pregnancy. They also should be allowed to share our doubts about the value of attempting to change these practices. We must be conscious that advice is an intervention in itself, and is potentially harmful. Should a physician feel confident that the three criteria mentioned in our introduction are fulfilled by an aspect of advice, then that advice is warranted. Should the criteria not be fulfilled, a non-judgmental informative discussion may leave a pregnant woman in a position to better decide what is best for herself. ◉

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