

MATERNAL WEIGHT GAIN DURING PREGNANCY IN CONNECTION WITH SOME DEMOGRAPHIC AND ANTHROPOLOGIC VARIABLES

É. Gárdos and K. Joubert

Central Statistical Office, Population Department, Fertility Section, Budapest; Demographic Research Institute,
Central Statistical Office, Budapest, Hungary

Abstract: Data come from the "Health and demographic survey of pregnant women and live-born children" carried out on a national representative sample. On the basis of pregnant women's data the following has been found. While extremely low or extremely large maternal weight-gain during pregnancy can call attention to the embryo being endangered, the authors are of the opinion that the utilization of the reference percentiles here is important in judgement of maternal weight-gain during pregnancy. On the basis of the variables studied, it has been found that pregnant women with the lowest educational attainment, with the oldest ages, with the largest pre-pregnancy weight get the lowest weight-gain during pregnancy.

Key words: Weight-gain during pregnancy; Reference values; Age; Educational attainment; Settlement type of home; Weight and height of the mothers.

Introduction

During the past decades it became apparent that either too big or too little weight-gain during pregnancy is disadvantageous. The former increases the risk of the development of toxemia as well as other obstetrical problems and its unfavourable impact on mother's health status after the pregnancy cannot be neglected. In consequence of the latter the risk of low-birth-weight is higher. Therefore, the optimum maternal weight-gain which assures the best conditions for the mother's health and her infant's intrauterin and extrauterin development should be determined. In respect of some demographic and anthropologic criteria the maternal weight-gain in the different groups of the female population investigated is different, that is the risk in the various groups are not the same in this regard. It must be mentioned, we do not state at all a direct relationship between maternal weight-gain and the new-born's birth-weight, however, a loss in weight or too little as well as too much weight-gain can be a warning that the foetus is endangered. Our data derive from the information on about 7700 pregnant women included in the "Health and demographic survey of pregnant women and infants", a project realized on a national representative sample (Joubert-Ágfalvi-Gárdos 1986). The examinations and interviews were realized with the first appearance at prenatal care simultaneously and later on the 20th, 27th and 34th week of pregnancy, and finally at the end of pregnancy.

On the following figures it can be seen markings in accordance with these points of time.

Reference values and percentile curves of maternal weight-gain during pregnancy

The reference values (Table 1) have been computed from the data of about 6500 pregnancies ended after 37–42 weeks with single live-births weighing 2500–4500 grams. These data and the percentile curves (Fig. 1) deriving from them are showing the weight-gain from the conception till the given duration of pregnancy. The reference values make the tracing the maternal weight-gain of every single woman possible for the doctors in charge of prenatal care. The disadvantageous developing of the weight-gain (either in positive or negative direction from the appropriate value at the given duration of pregnancy) can be observed in time and then the necessary examinations, treatment and instructions can decrease the degree of risk.

Table 1. Reference values of weight-gain during pregnancy from the conception till the end of pregnancy

Duration of pregnancy (weeks)	N	\bar{x} (kgs)	SD	Percentiles (kgs)						
				3	10	25	50	75	90	97
20	6440	5.21	3.49	-0.41	0.36	2.51	4.50	6.68	8.90	12.02
27	6504	8.70	3.91	1.23	3.53	5.68	7.96	10.48	13.06	16.13
34	6468	11.63	4.37	3.42	5.89	8.33	10.89	13.39	15.63	19.94
37	357	12.62	4.85	3.45	6.34	8.87	11.81	15.13	18.37	22.06
38	790	12.47	4.69	3.16	6.18	9.11	11.86	14.69	17.87	21.78
39	1460	12.81	4.73	3.53	6.43	9.17	12.11	15.19	18.49	21.91
40	2284	12.94	4.76	3.70	6.49	9.30	12.31	15.28	18.37	22.54
41	1123	12.98	4.70	3.79	6.65	9.36	12.31	15.49	18.50	22.03
42	359	13.65	5.13	3.26	6.59	9.93	13.25	16.28	19.51	23.32

Mother's age at the end of pregnancy

On Fig. 2 (and on the following figures) the lower and upper limit of the weight-gain till the 20th, 27th and 34th week of pregnancy is marked by solid lines and the values at the end of pregnancy by dotted ones. In this sample the gestational period of the liveborn ranges 22–45 weeks. The considerable diversion of lines before 33–36 weeks is due to the few number of cases on the one hand, and to the factors responsible for the early delivery on the other. This statement is true for the following figures as well. Generally, regarding the weight-gain during pregnancy there is no material difference between the various age-groups. Pregnant women under 25 years gain weight slightly more slowly than the olders. However, at the end of pregnancy at the gestational age of at least 37 weeks the women older than 30 years have significantly less weight-gain than the 18–29 year-old mothers. This phenomenon can be explained by the fact that pregnant women over 30 years frequently have a higher pre-pregnancy weight and this (as it latter will be seen) has a considerable impact on the size of weight gains.

The social status of the mother has been approached with two variables: the mother's educational attainment and the settlement type of her home.

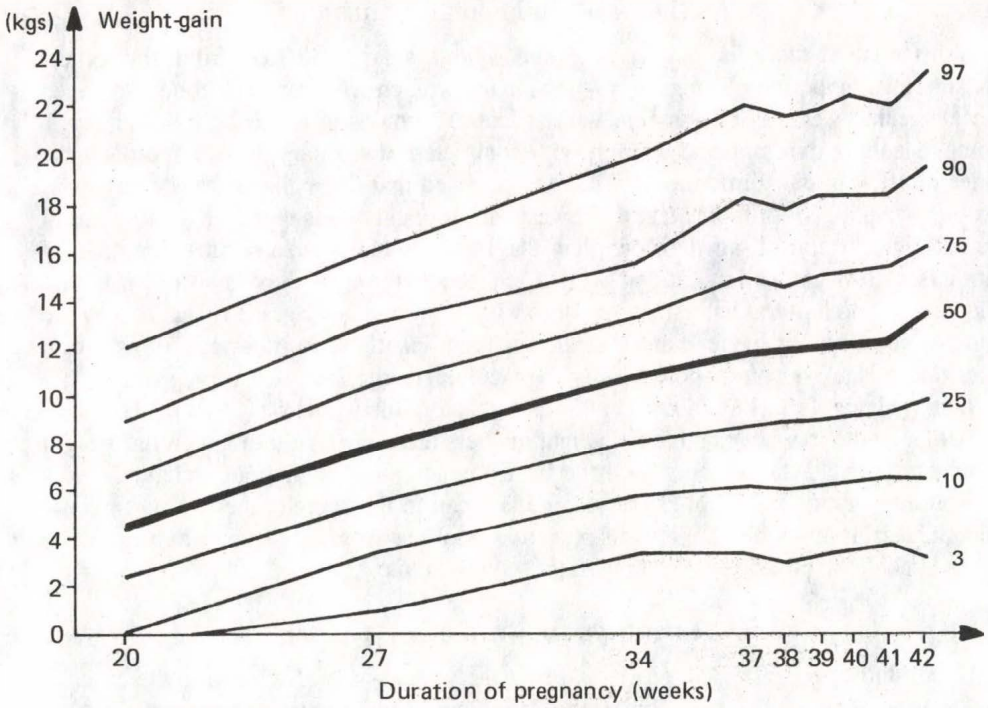


Fig. 1: Percentile curves of maternal weight-gain during pregnancy

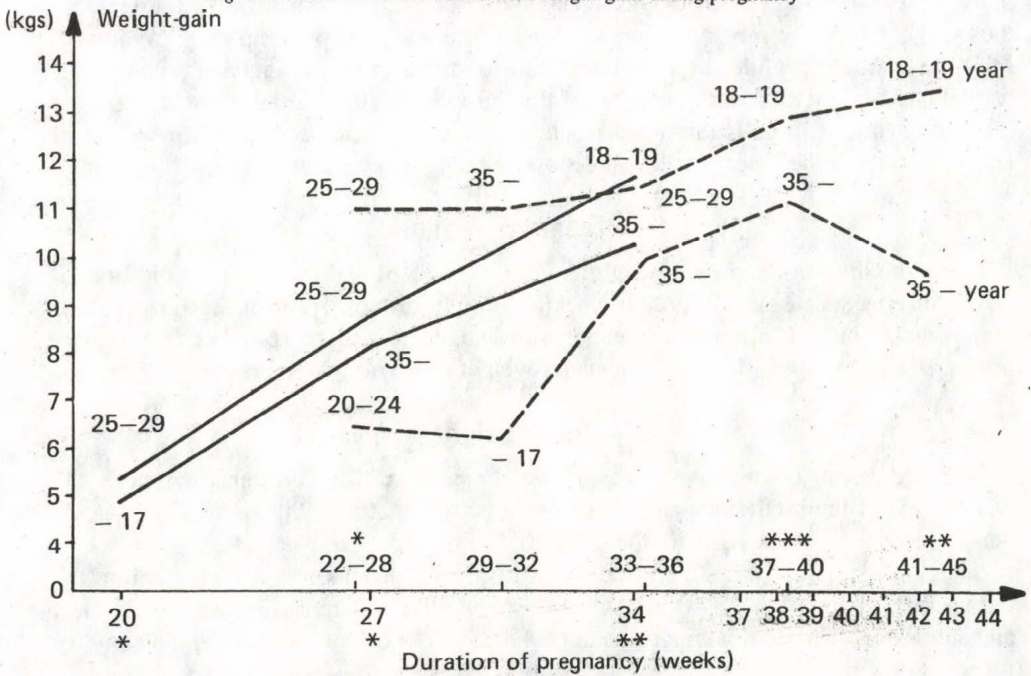


Fig. 2: Average maternal weight-gain by her age

(n.s. = not significant; * = significant at $p < 0.05$; ** = significant at $p < 0.01$; *** = significant at $p < 0.001$)

Mother's educational attainment

Substantially, there is only one group which sharply differs from the others considering any period of pregnancy: they are the women who have not completed even the elementary school. The women with at least 13 grades prove to be more or less a homogeneous group, and the women with completed elementary school approach the latter rather than the former ones. It can be supposed that the explanation for the lower average weight gain of mothers at the lowest educational level is that their socio-cultural status is much more disadvantageous than that of any other groups because the 45% of mothers with 8 grades is a skilled worker, consequently even they have much higher educational and cultural level, than the ones with no more than 7 grades. That is why the knowledge of health hygiene and nutrition is significantly more poorish in this group than that of the educated ones. It must be mentioned, the rate of the pregnancies not wanted is almost four times higher in this group than in the whole sample (Fig. 3).

Although the low pre-pregnancy-weight mothers are more likely to gain more weight during pregnancy, the mothers with the lowest educational attainment weighted 2 kgs less on the average before pregnancy than the mean in the sample, their weight-gain is nevertheless unfavourable. With this it also is true that women in this group are three times likely to be under 154 cms than in the whole sample.

Settlement type of the mother's home

Either during pregnancy or at the end of it the weight-gain of women in the cities is the highest. Mothers living in Budapest or in villages gain almost the same weight till delivery. The strikingly advantageous situation of cities can be explained by the fact that they can combine the infrastructural conditions of the capital with the more favourable life-style of towns, while the population here is much more homogenous than in the capital and the "melting pot" character of the European metropolises is not effective. It must be mentioned that regarding the outcome of pregnancies and the birth weight of new-born as well the cities have got the most advantageous conditions (Fig. 4).

Prepregnancy weight

The more the pre-pregnancy weight the less the size of weight-gain is in the first 20 weeks of pregnancy. After the 20th week the weight-groups under 54 kgs prove to be homogenous, but the former tendency is unchangeable and moreover, as pregnancy progresses the groups of large prepregnancy weight move off the others (Fig. 5.)

Mother's height

The higher the mother the more the weight gain is. The difference between the weight-gain of the highest and shortest women is 0.7 kg at the 20th week of pregnancy which increases to 1.4 kgs till the 27th week and 7 weeks later it exceeds 3 kgs. Although this regularity is slightly confused for the pregnancies have ended before the term, for the delivery at 37-40 weeks it is restored. The difference between the highest and shortest women does not increase in the latest weeks of pregnancy, on the contrary it decreases (Fig. 6).

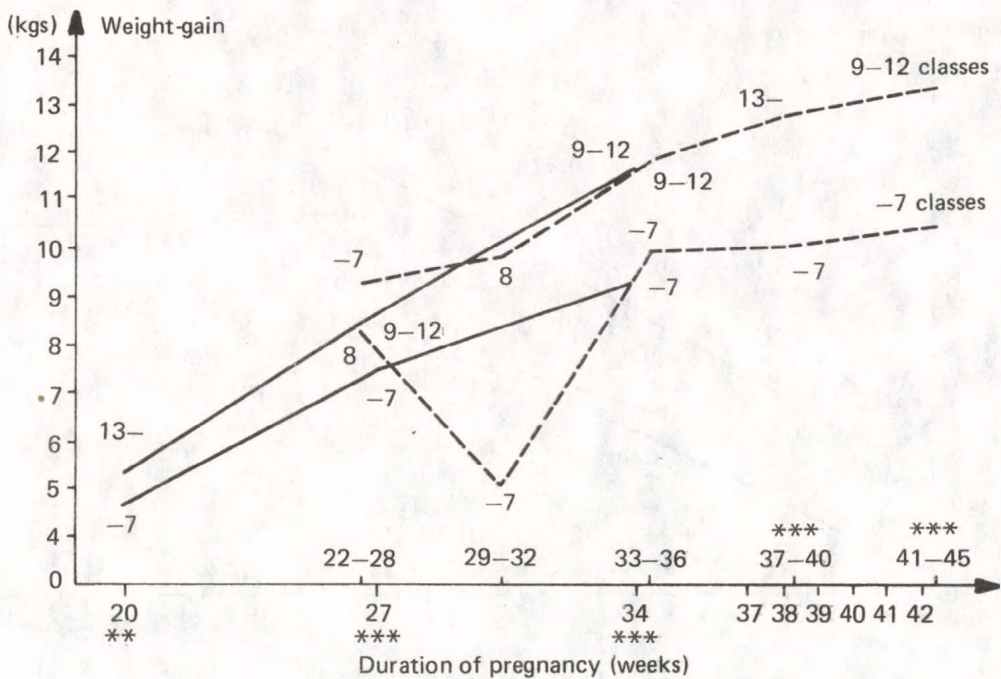


Fig. 3: Average maternal weight-gain during pregnancy by her educational attainment

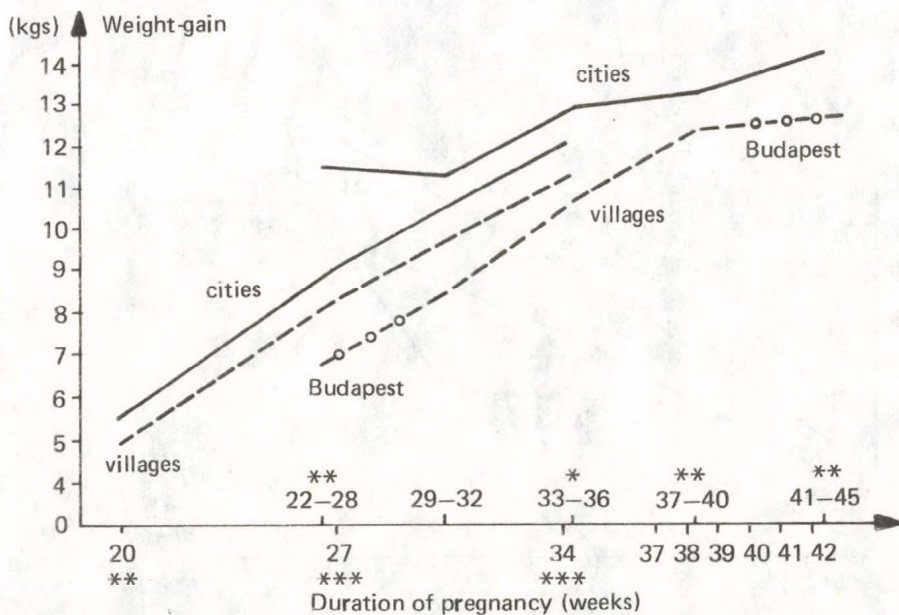


Fig. 4: Average maternal weight-gain during pregnancy by her settlement type

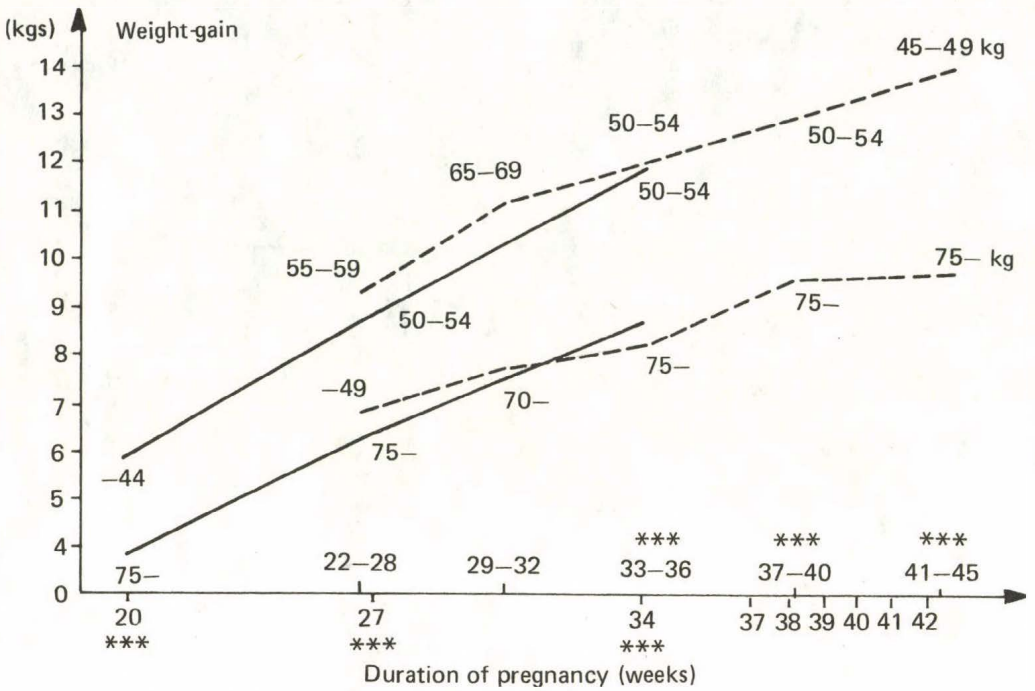


Fig. 5: Average maternal weight-gain during pregnancy by her weight before conception

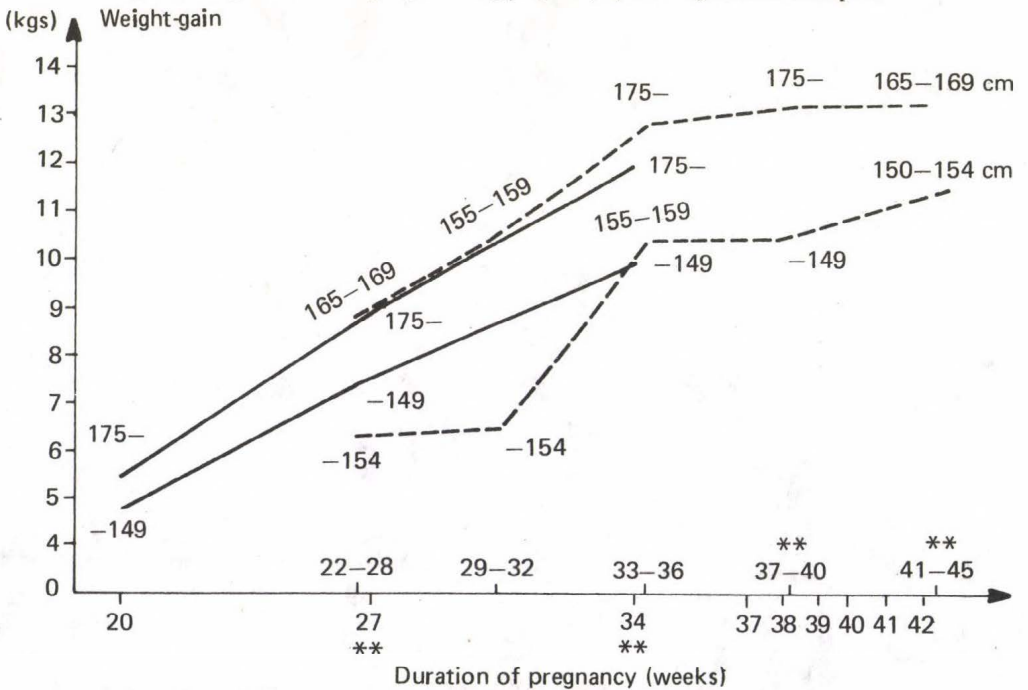


Fig. 6: Average maternal weight-gain during pregnancy by her body height

Summing up the foregoing it can be stated that the size of maternal weight-gain during pregnancy is disadvantageously effected by the mother's low educational attainment and if her home is in Budapest or in a village. In both effects the socio-cultural conditions under the average is responsible for the not appropriate weight gain.

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Reference

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Mailing address: Éva Gárdos
Central Statistical Office, Population Department, Fertility Section
II. Keleti Károly u. 5–7.
1525 Budapest Pf. 51. Hungary

