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Medico-Social Implications of Pregnancy in Teenager Mothers †

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Abstract: *Background and Objective:* For most teenagers, pregnancy brings insecurity, problems, fear and many questions. The main objective of this research is to determine the outlined profile of the pregnant teenager and the medical implications associated with pregnancy in mothers under 18 years of age. *Materials and Methods:* A cross-sectional questionnaire-based study was carried out in 2019 and 2020 in Ploiesti, Romania. A total of 200 childbearing women who gave birth at the Hospital of Obstetrics and Gynaecology with ages between 13–42 years participated voluntarily in this study with given informed consent. Out of them 100 were under 18 years of age (group A). The group B (control group) consisted of 100 childbearing women with ages over 18 years. The questionnaire was composed of 29 closed questions, administered by the same investigator in a face-to-face interview, contained general data of childbearing women, (age, marital status, place of residence, number of children, occupation, level of education, ability to understand medical terms – health literacy- by applying the Sahl test) and aspects related to the family environment, (parental education, parental occupation , characteristics of the dwelling, number of siblings). Beside the questionnaire, data about the obstetrical profile of the childbearing woman, data about the birth and the new-born baby were collected. The resulting data were centralized in a database, gathering all the data from the questionnaire and as well as from the observation sheets. *Results:* Teenager childbearing women (mothers under 18 years of age) from group A had an average age of 16.56 ± 1.65. The highest frequency of births was at 17 years of age. The percentage of births in very young girls (13-15 years old) accounts for 28% (n = 28). The analysis of the two groups showed that only 40 mothers under 18 years of age came from families whose parents have a registered marriage (p = 0.011 as compared to the control group). We found that in 65 teenagers the beginning of sexual life took place at an earlier age (under 14 years). Regarding pregnancy monitoring, expressed by the number of medical checkouts and examinations, there are significant differences between the studied groups ($p < 0.001$). The lack of health education and knowledge of medical terms is evident in the group of teenage childbearing women. The application of the Sahl test to both groups showed a low level of health literacy in the group of teenager childbearing women, 84 cases vs. 35 cases in the control group. When studying the number of medical investigations performed during pregnancy, we found significant differences ($p < 0.001$): only 116 childbearing women from both groups performed medical investigations during pregnancy and only 42 were teenagers from these 116. Of 95 childbearing women from both groups who had hospitalizations during pregnancy, 56 were from the group of teenager mothers compared to 39 from the control group (p = 0.016). Teenager childbearing women gave birth to children with low weight for their gestational age ($p < 0.001$ compared with the control group): in group A there were 14% and in group B only 4%. Regarding the gestational age, in the case of teenage mothers we had an average of 37.88 ± 2.13 weeks of gestation with a median of 38 weeks, compared to the gestational age in the control group of 38.41 ± 1.57

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weeks, median of 39 weeks. *Conclusions:* In Romania there are teenagers that became mothers at early ages. A pregnancy at an age between 13–15 years may come with medical implications, both physically and mental, thus medical supervision is important. Sexual and contraceptives' education in school and in the family may help the teenagers to control the possibility of becoming pregnant at such an early age. Therefore such type of educational programs must exist in rural and urban schools and communities. The midwife may play an essential role in the rural communities. A better management and multidisciplinary approach is needed.

Keywords: pregnancy; mothers under 18 years of age; medical knowledge; risk factors

1. Introduction

Pregnancy should not be considered as a disease because is the most beautiful life event and physiological state in a woman's life, marked by emotional vulnerability and the association of adaptive changes of a physical and psychological nature. For most teenagers, pregnancy brings insecurity, problems, fear and many questions. Pregnancy means problems at home with the parents, the child's father and those around them. The health problems of children born by teenagers could be major because from a medical point of view the adolescent is not anatomically and physiologically prepared to procreate without risk.

Statistics shows that globally, every day, about 20,000 girls under the age of 18 become mothers, this phenomenon is manifesting mainly in developing countries, but not only. Of the total annual number of 7.3 million teenager mothers, those under the age of 15 represent two million. If these trends continue, the number of births from girls under the age of 15 could increase to three million by 2030 [1]. Births from teenager mothers account for 10% of all births in the world and 23% of maternal morbidity and mortality. Pregnancy in adolescence is the leading cause of death in girls aged 15 to 19 worldwide; 90% of deaths occur in low-income countries and most can be prevented [1,2]. Among teenagers between 15 and 19 years old, in Romania, annually, 5–10% gets pregnant. The birth rate in these adolescents is constantly increasing. Romania ranks first in the European Union (EU) in the number of children born by mothers under the age of 15, representing a third of all EU cases, e.g. 676 in 2000. In fact, one in ten births and one in ten abortions were produced in 2016 in minors (over 26,000 minors have become pregnant annually in Romania) [3].

Pregnancy in adolescence, at teens, especially in children under 15 years of age, is associated with higher maternal, obstetric and perinatal risks than pregnancy in adulthood [4]. Therefore, pregnancy in adolescence is considered a pregnancy with a high risk of complications and requires special management [5]. Children born from teenager, minor mothers, mothers that are under 18 years of age, are both socially and medically vulnerable, especially because they are premature babies or because they come from pregnancies that have not been medically monitored [4,5].

The main objective of this research is to to determine the outlined profile of the pregnant teenager and the medical implications associated with pregnancy in minor mothers, in order to prevent neonatal complications and to identify the elements that could be acted upon in the future, for the prevention of the phenomenon in question.

2. Materials and Methods

A cross-sectional questionnaire-based study was carried out in 2019 and 2020 in Ploiesti, Romania. A total of 200 childbearing women who gave birth at the Hospital of Obstetrics and Gynaecology with ages between 13–42 years participated voluntarily in this study with given informed consent.

The questionnaire was composed of 29 closed questions, except for questions related to name, surname and age. It was administered by the same investigator in a face-to-face interview, because not all pregnant women can read and write.

The questionnaire contains general data of childbearing women (age, marital status, place of residence, number of children, occupation, level of education, ability to understand medical terms – health literacy- by applying the Sahl test) aspects related to the family environment (parental education, parental occupation , characteristics of the dwelling, number of siblings).

Beside the questionnaire, data about the obstetrical profile of the childbearing woman, data about the birth and the new-born baby were collected. The resulting data were centralized in a database gathering all the data, from the questionnaire and as well as from the observation sheets.

The questionnaire was applied from November the 1st 2019 to March the 1st 2020. Participation to the study was open to all minor, teenager childbearing women hospitalized during this period, until reaching the number of 100; for each minor pregnant woman interviewed, a childbearing woman who was over 18 years of age, hospitalized in the same ward, in the same period of time, was selected on the basis of voluntary option. The 200 childbearing women group represents 22.07% of the total number of births registered during this period.

The study was performed in compliance with the rules of medical ethics, being approved by the Ethics Committee of the hospital, "Ethical Committee of scientific research of Obstetrics and Gynaecology Hospital, Ploieşti, Romania", final approval number: 2164 from21 February 2019.

Patients expressed their agreement to participate by signing the informed consent and agreed to the use of their data from the observation sheets and the results of the questionnaire.

The 200 childbearing women were grouped into two, namely: Group A, consisting of 100 minor, teenager childbearing women under the age of 18 and Group B, consisting of 100 childbearing women over 18 years of age

3. Results

The general characteristics of the groups are shown in Table 1. Teenager childbearing women from group A had an average age of 16.56 ± 1.65, with a median of 17. The highest frequency of births in this group is at 17 years of age. However, the number of births in very young adolescents (13–15 years old), which represents 28% of the group A is alarmingly high.

Table 1. Distribution of childbearing women according to age, place of living, occupation, education, ethnicity.

.	Total number	Group A	Group B
age			
Average	21.42	16.56	18
Standard deviation	6.7	1.65	17
Median	18	17	26
Place of living			
Rural	114	54	60
Urban	86	46	40
Occupation			
Household	119	67	52
Employee	54	6	48
Student	27	27	0
Education			

No studies	12	12	0
Primary cycle	35	27	8
Gymnasium cycle	67	32	35
Vocational school	49	22	27
High school	29	7	22
Higher education	7	0	7
Postgraduate studies	1	0	1
Ethnicity			
Romanian	48	8	40
Rome	51	39	12
Other ethnicities	1	1	0
They come from single-parent families	14	13	1

The environment in which teenagers develop could lead to pregnancy [2]. In order to objectify if this is the case in our study, we analysed the data of the social status and we found that, in both groups, the childbearing teenager women came mainly from rural areas (Table 1). A significant percentage teenager mothers are of Roma ethnicity, 76.47 (n = 39 from the total of 51 of Roma ethnicity childbearing women) and 92.85% (n = 13 from the total of 14) came from single-parent families (Table 1).

Trying to analyse the economic level of the families from which the childbearing teenagers come, we found that in 15% (n = 15) of cases these young girls live in social housing and in 9% (n = 9) of cases the house where they live consists of a single room house compared to the control group, where social housing is encountered only in 5% (N=5) of cases. We also found that a high number of teenager childbearing women have parents with low level of education, are part of large families and live in a home with fewer number of rooms compared to the number of family members (Table 2). We also noticed that the level of education of the teenager childbearing women and her family is low: the number of classes graduated by the minor mothers, as well as by their parents is lower than the number of compulsory classes in the current educational system in Romania. The analysis of the two groups shows that only 40 teenager mothers come from families whose parents have a registered marriage, the rest coming from families whose parents are in cohabitation (35 out of 100) or from single-parent families (25 out of 100), the difference is statistically significant compared to the control group, p = 0.011.

Table 2. Economic and social characteristics of minor childbearing women.

Characteristic	Media	Standard deviation	Median
Number of classes completed by the minor mother	6.78	3.47	8
Number of classes completed by the minor's mother	6.25	4.4	8
Number of classes completed by the minor's father	6.65	4.11	8
Number of brothers	2.9	1.97	2
Number of rooms in the family home	1.7	0.98	2

Analysing the beginning of the sexual life of the respondents included in the study, we found that in 65 adolescents the beginning of sexual life took place at an earlier age (under 14 years), in 12 cases at the age of 15-16 years, and in 17 cases at 17–18 years. Thus, the probability of starting sexual life earlier than the age of 16 years old is high, the average age at which adolescent girls said they had their first sexual experience is 13.1 ± 1.63 years and the median is 13 years of age. In the present study, in 38 cases, the childbearing minor women reported sexual abuse in the anamnesis.

The lack of health education and knowledge of medical terms is evident in the group of teenage childbearing women. Accurate measurement of health literacy is essential to improve accessibility and effectiveness of health care and prevention. One measure frequently applied in international research is the Short Assessment of Health Literacy

(SAHL). A score between 0 and 14 suggests that the examinee has a low level of health literacy according to [6,7]. The application of the Sahl test to both groups showed a low level of health literacy in the group of adolescent childbearing women, 84 cases vs. 35 cases in the control group (Table 3). Evaluating the educational level and employment of childbearing women from the present study, we observed that, at the time of pregnancy, of the 84 adolescents with low level of health literacy, 21 are students, 6 are employed and the rest are neither student nor employed.

Table 3. Level of knowledge about health (health literacy) of the childbearing studied women.

Level of knowledge about health (health literacy)	under 14 points	over 14 points
Lot A	84	16
Lot B	35	65

Regarding pregnancy monitoring, our study found statistically significant differences between the two studied groups, ($p < 0.001$). For a childbearing woman, routine check-ups at least once every 3 weeks during pregnancy is very important. We noticed in the group of adolescent childbearing women, an average of 3.52 ± 4.56 controls performed during all pregnancy, (median of 1), compared to 7.34 ± 5.75 controls in the control group, (median of 8). Studying the number of medical investigations performed during pregnancy we found significant differences, ($p < 0.001$): only a total of 116 childbearing women from both groups performed medical investigations during pregnancy and only 42 were teenagers from these 116. It is also noteworthy that, out of a total of 95 childbearing women from both groups, who had hospitalizations during pregnancy, 56 were from the group of adolescent mothers compared to 39 from the control group ($p = 0.016$).

Regarding the diagnosis associated with pregnancy at the time of admission into hospital, it can be seen that in 17 cases there were urogenital infections in the group of adolescent pregnant women compared to 5 cases in the control group, anaemia occurs in 5 cases, early dysgravidia in 3 cases, preeclampsia in 3 cases, imminent miscarriage in 15 cases, placental insufficiency in 13 cases.

According to the study, adolescent childbearing women gave birth to children with low weight for their gestational age, the difference was statistically significant, $p < 0.00001$, (Table 4). Regarding the gestational age, in the case of teenage mothers we had an average of 37.88 ± 2.13 weeks of gestation with a median of 38 weeks, compared to the gestational age in the control group of 38.41 ± 1.57 weeks, median of 39 weeks.

Table 4. Distribution of new-born's by weight.

Birth weight	<2000 g	2000–2490 g	2500–2990 g	3000–3490 g	3500–3990 g	4000–4490 g	Peste 4500 g
Lot A	1	13	43	31	11	1	0
Lot B	1	3	17	48	26	4	1

Also, a higher incidence of new born babies with lower Apgar at birth among teenager minor childbearing women was observed, $p = 0.00018$, Table 5.

Table 5. Distribution of new-born babies according to the Apgar score.

	Media	Standard Deviation	Median
Total	8.49	0.97	9
Lot A	8.33	1.12	9
Lot B	8.92	0.68	9

4. Discussion

Analysing the results of this study, we observed some common characteristics in the group of childbearing teenager mothers that define the profile of this category of pregnant women, namely: precarious socio-economic condition, greater vulnerability, low level of

medical education, reduced addressability to medical services during pregnancy, higher number of hospitalizations during pregnancy and pregnancy with repercussions on the foetus.

Pregnancy in teenagers is not only the result of not taking sexual risks, it is strongly influenced by childhood experiences in the family and social environment, especially those related to unstable parenting or the model of early motherhood [8–10]. Pregnant adolescents who grew up in more disadvantaged families (rural areas, large families, do not live with both parents, poor mother's education, non-prestigious occupation of the father, belonging to the Roma ethnic group) have higher risks for early pregnancy and early non-marital birth. Pregnancy in adolescents compromises women's educational prospects and economic opportunities, being a marker of such conditions rather than a root cause [10].

This study highlights the precarious socio-economic condition of minor mothers: although the pregnancy in minor mothers seems to be equally distributed between urban and rural areas as in the general population, minor childbearing women frequently neither work nor continue their studies, they come more frequently from single-parent families or from homes where their parents live in cohabitation.

Due to pregnancy, most adolescent mothers drop out of school, unable to receive the education they need [1]. According to data from the literature, the level of education and welfare status of women has a significant impact on pregnancy in adolescents [11]. In the analysed group of minor mothers, 12% (n = 12) are without studies at all and only 7% (n = 7) have completed or are in the process of completing high school.

Numerous studies have evaluated the impact of pregnancy and childbirth on adolescents from a medical, psychological and socioeconomic point of view [11–14]. The results of these studies show how much the adolescents rely on the support and backing of the family and community. Thus, adolescents who benefit from these advantages are more likely to continue their studies and get employed [13]. The increased risk of giving birth to a low birth weight baby, in the case of adolescents, is determined by social factors (poor prenatal evidence, poverty) and behavioural (smoking, substance abuse) and less by biological ones [15,16].

The increased vulnerability of this category of pregnant women can also be observed, many adolescents begin their sexual life faster and, in a significant proportion, they are victims of sexual abuse. This study shows that a high percentage, 38%, (n = 38), of minor mothers reported that the pregnancy occurred as a result of sexual abuse. Unfortunately the number may be in reality higher, as a considerable number of teenagers avoid discussing this topic out of fear or out of personal reasons. The result of our study agrees with other research results that have shown that the first sexual experience for most adolescents is related to drunkenness, drug use, spending nights away from home or is the consequence of sexual abuse and hidden violence [4,17]. Pregnancy is a special stage for any woman, hormonal changes during this period increase the sensitivity of the pregnant woman to internal and external stimuli, increasing vulnerability to stress and unforeseen events.

At the same time, our study demonstrates the low level of medical education. From the analysis of the answers given to the Sahl test by the adolescents participating in the study, it can be seen that they do not know the notion of condom or virus. Illiteracy in adolescence interacts significantly with pregnancy, and can lead to complications with significant effects on maternal health, both immediately and after pregnancy. Pregnancy and childbirth in adolescents are a complex social problem, with medical, social and economic consequences, and the early age of the onset of sexual life and the increased risk of pregnancy resulting in complications is a cause for concern. All of these could be explained by the lack of information in the group of teenager's mothers about the damage of early motherhood and contraceptive methods [18].

This study was conducted in a country where the licensed midwifery profession appeared in 2011. In Romania there are currently 1000 licensed midwives, but they cannot

be integrated into the care system due to the gap legislation, according to a statement from the Ministry Health [19] although the development of this network could facilitate some of the problems of pregnancy in minors. According to a study by the State of the World's Midwifery, well-trained midwives could help prevent about two-thirds of all maternal and new-born deaths. They could also provide 87% of all essential sexual, reproductive, maternal and neonatal health services. However, only 42 per cent of midwives work in the 73 countries where more than 90 per cent of all maternal and neonatal deaths occur [14]. Although in the countries of the European Union the assistance provided by midwives is a natural practice, in Romania there are still no rules of practice, guidelines and professional protocols that clearly regulate this profession, by harmonizing with European legislation [19,20].

The level of education, economic precariousness and social life could be the explanation of the reduced addressability to medical services during pregnancy. Adolescent pregnant women performed statistically significantly fewer controls during pregnancy, benefited from fewer screening tests, and had more hospitalizations during pregnancy. Research shows that pregnant adolescents are less likely to receive quality prenatal care, often late in the third trimester of pregnancy, or limited to childbirth care [21,22]. Studies report that 1/3 of pregnant adolescents receive insufficient prenatal care, and their children are at increased risk of developing health problems or prolonged hospitalization compared to children of adult women [22]. Thus, in the case of teenage pregnant women who had hospitalizations during pregnancy, the most common diagnoses are: urogenital infections, imminent miscarriage and placental insufficiency. The high frequency of these complications could be explained by the immaturity of the maternal organism.

Regarding the onset of childbirth, it was found that a considerable percentage of the group of adolescents had in hospital premature rupture of membranes (n = 56 compared to n = 23), a situation that could be explained by the more frequent presence of sexually transmitted infections. The high prevalence of these infections, according to [23], is also due to a low level of knowledge about sexually transmitted infections in adolescents aged 14–19 years compared to young people aged 20–24, [23–26]. Sexually transmitted infections in pregnancy are generally complicated, regardless of the age of the mother with premature birth, chorioamnionitis, puerperal infections, etc. Adolescents have been shown to have sexually transmitted infections that increase the risk of premature rupture of membranes [27]. In our study, most adolescents did not go to the doctor during pregnancy, so they did not benefit from methods to detect these infections and consequently no adequate treatment, and in the case of pregnant women hospitalized during pregnancy, the predominant diagnosis was urinary tract infections supporting through these data, the negative effects of sexually transmitted infections in this category of pregnant women.

The socio-economic and medical factors listed above have repercussions on the foetus. The data obtained in our study show that in the evolution of pregnancy and birth in adolescents there is an increased frequency of babies with low birth weight, but also a lower average Apgar score at birth compared to the control group. Data from the literature suggest that new-borns from adolescent mothers have a more difficult postnatal adaptation [28–31].

In our study, of the total number of babies born from minor mothers, a significant percentage 14%, (n = 14), weighed less than 2490 g, compared to only 4% (n = 4) of newborns in the control group. Data from the literature suggest that neonatal prematurity is related to the mother's age. The low level of estrogenic and progesterone secretion, in the preconception period, determines the formation of placental insufficiency, hypoxia and intrauterine growth restriction in the foetus, low birth weight, which suggests the need for access to specialized medical care for pregnant women. These complications can also be correlated with the low number of prenatal visits, late initiation of prenatal care, inadequate prenatal care, but also other factors such as race, marital status, low level of schooling and poverty, in the present study was found a mean of 3.52 ± 4.56 controls performed

during pregnancy with a median of 1, compared with 7.34 ± 5.75 controls in the case of the control group, with a median of 8.

A study that analysed data from Moldova estimated that, if juvenile pregnancy disappeared, infant mortality would decrease by 4–8% [32].

It has also been found that there is a direct link between low birth weight and the young age of the mother which has been explained by the fact that adolescents have a shorter cervix and a smaller uterine volume [33]. Moreover, due to their precarious social status, adolescent mothers may have a lower concentration of glycine or other amino acids for intrauterine growth and development; these nutritional deficiencies could lead to intrauterine growth retardation and lower birth weight [34]. Biologically, cervical and uterine vascularity is not fully developed in pregnant adolescents. Haemostatic reactions in adolescents are unstable, which aggravates the prognosis for mother and fetus and determines the incidence of haemorrhagic disorders in the immediate postpartum [33]. Poor health literacy may conduct in also in low vaccination education [35–37]. In conclusion, the evolution of pregnancy and childbirth in adolescents has distinctive features, because it takes place against an unfavourable background: biological immaturity of the body, underdeveloped neuroendocrine and immune systems. Pathological changes in the mother's body lead to decreased adaptive capacity of the foetus and disturb the balance in the mother system, placenta, and foetus, as illustrated in our study by the lower birth weight and significantly lower Apgar score in children born to minor mothers.

5. Conclusions

In Romania there are teenagers that became mothers at early ages. A pregnancy at an age between 13-15 years may come with medical implications, both physically and mental, thus medical supervision is important. Sexual and contraceptives' education in school and in the family may help the teenagers to control the possibility of becoming pregnant at such an early age. Therefore such type of educational programs must exist in rural and urban schools and communities. The midwife may play an essential role in the rural communities. A better management and multidisciplinary approach is needed.

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