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Original Research Article

Obstetrical complications among adolescent girls at the maternity ward of Ignace Deen National Hospital

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ABSTRACT

Background: The objective of this study was to highlight obstetrical complications that occurred among adolescent girls who delivered at the ward and to identify factors associated with the occurrence of such complications.

Methods: This was a prospective study of descriptive and analytical type extending over a period of one year from September 1, 2016 to August 31, 2017 carried out at the maternity ward of Ignace Deen National Hospital at Conakry Teaching Hospital (CHU). It covered a continuous series of 1034 deliveries among adolescent girls.

Results: The frequency of childbirth among adolescent girls was 16.7%. The main complications identified were dystocia, severe preeclampsia, eclampsia, retroplacental hematoma, placenta previa, uterine rupture, severe anemia, postpartum hemorrhage and puerperal endometritis. These complications occurred among adolescent girls aged 18 to 19, christian, skin and pelvic bones secondary school or university students. Factors associated with such complications were the marital status ($p=0.010$), the gestational age ($p=0.012$), the number of prenatal consultations ($p=0.001$), the place of prenatal consultation ($p=0.001$), the reason for admission ($p=0.000$) and the mode of admission ($p=0.000$).

Conclusions: Childbirth among adolescent girls is frequent in this context; complications are numerous but they are preventable in the vast majority of cases.

Keywords: Adolescent girls, Ignace deen, Obstetrical complications

INTRODUCTION

Adolescent girl's pregnancy, also known as early pregnancy, is defined by the World Health Organization (WHO) as the occurrence of pregnancy in young people aged between 10 and 19.¹

This phenomenon is becoming increasingly frequent in the world with each year, 150,000,000 young people aged 15 to 19 giving birth to a child, i.e. 10% of all births, most of which occurring in developing countries.²⁻⁴

While adolescent girls' pregnancy is considered a public health issue in Western countries, in developing

countries, where 30% of women give birth during their teenage years, early motherhood is socially and culturally accepted.⁵

Early pregnancy is a high-risk situation for obstetric complications due to the physiological and sociological characteristics that condition the behaviour of this population group.¹ Such complications can occur during pregnancy, but especially during childbirth and also after delivery, as individuals are immature, and they are growing physically, sexually and psychologically.¹

The risk of obstetric fistula and maternal death is high if pregnancy occurs before the age of 20.⁶

The high frequency of such early pregnancies and the resulting high risk of maternal morbidity and mortality prompted this study on "Obstetric Complications in adolescent girls at the maternity ward of Ignace Deen National Hospital".⁶

Objectives

- To calculate the frequency of childbirth among adolescent girls at the ward during the study period
- To identify obstetrical complications that occurred among teenage girls who gave birth in the ward during the study period
- Describe the socio-demographic characteristics of adolescent girls who developed these complications
- Identify risk factors for such obstetrical complications.

METHODS

This was a prospective study of descriptive and analytical type extending over a period of one year from September 1, 2016 to August 31, 2017 carried out at the maternity ward of Ignace Deen National Hospital at Conakry Teaching Hospital. It covered a continuous series of 1,034 teenage deliveries.

Inclusion criteria

- Were included in the study all adolescent girls who delivered in the ward during the study period with or without obstetrical complications and who agreed to participate in the study.

Exclusion criteria

- Were excluded from the study all teenagers who did not agree to participate in it.

All teenagers who delivered in the ward during the study period were entirely recruited. This yielded a sample of 1034 adolescent girls, 343 of whom developed obstetric complications.

For the descriptive part of this study, we calculated proportions for the qualitative variables, the average, the standard deviation, the minimum and the maximum for quantitative variables.

For the comparison, adolescents were divided into two groups:

- Group1: composed of adolescent's girls who experienced obstetrical complications
- Group 2: composed of adolescent girls who did not experience any obstetrical complication.

The following parameters were compared between the two groups : adolescents' age, their marital status, their

level of education, their age at marriage, their religion, their gestational age, their parity, their pregnancy term, the number of ANC they had, the ANC venue, the reason for admission and the mode of admission. For the comparison of proportions, we used Pearson's Chi2 test after checking its application conditions. The difference was considered significant when the p-value was less than 5%.

From an ethical point of view, we sought and obtained prior authorization from the Head of Department and the Hospital's Ethics Committee. Informed patient consent, anonymity and confidentiality were respected.

RESULTS

Frequency

Among the 6184 deliveries performed at the ward during the study period, 1034 involved adolescent girls i.e. a frequency of 16.7%.

Table 1: Breakdown of complicated cases by type of complication.

Type of complication	Number of people	Percentage (%)
In the course of labor	343	74.89%
Pre-eclampsia	33	9.6%
Eclampsia	38	11.1%
Dystocia	201	58.6%
HRP	40	11.7%
Placenta previa	4	4.1%
Uterine rupture	1	0.3%
Severe anemia	8	2.3%
Others	8	2.3%
Complication in postpartum	115	25.11%
Postpartum hemorrhage	21	18.26%
Endometritis	10	8.7%
Eclampsia	12	10.43%
High blood pressure	27	23.5%
Anemia	44	38.3%
Others	1	0.9%
Total	458	100%

Mode of childbirth among teenagers

Out of the 1034 deliveries among adolescent girls, 627 deliveries by vaginal delivery (60.6%) and 407 caesarean sections (39.4%) were recorded.

History of female genital mutilation

Almost all adolescent girls have undergone genital mutilation with 1023 cases of excision (98.93%) and 2 cases of infibulation (0.19%). Only 9 adolescent girls (0.87%) had not undergone genital mutilation. The complications encountered were more frequent during

labor than in the postpartum, 74.89% versus 25.11%. During labor dystocia remains the most frequently encountered complication, 58.6% followed by retro placental hematoma and eclampsia with 11.7% and 11.1% respectively. In the postpartum, anemia was the most common complication, 38.3% followed by hypertension and postpartum hemorrhage with 23.5% and 18.2% respectively.

Adolescent girls' age

The average age was 17.5 with a standard deviation of 1.2, a minimum of 14 and a maximum of 19. The most affected age group was the 18-19 years old group i.e. 34.5%. The occurrence of obstetric complications was independent of the teenager's age ($p=0.542$).

Table 2: Breakdown of adolescent girls who developed obstetrical complications versus those who did not, according to the number of prenatal visits.

Obstetrical complications						
Number of PNCs	Yes		No		Total	
	No.	I (%)	No.	I (%)	No.	I (%)
0	7	70.0%	3	30.0%	10	100%
1	52	44.4%	65	55.5%	117	100%
2	88	38.8%	139	61.2%	227	100%
3	86	31.6%	186	68.4%	272	100%
4	82	29.5%	205	73.7%	287	100%
5	25	26.4%	70	73.7%	95	100%
6	3	11.5%	23	88.5%	26	100%
Total	343	33.2%	691	66.8%	1034	100%

Khi 2: 35, dll: 6, p: 0.001.

Marital status

The frequency of obstetrical complications (35.9%) was significantly higher among married adolescent girls than among unmarried adolescent girls (27.9%) with $p=0.010$.

Occupation

Secondary school and university students were the most affected with 39.5% followed by those in the liberal professions with 34.4%.

Table 3: Breakdown of adolescent girls who developed obstetrical complications versus those who did not develop complications depending on the location where prenatal consultations took place.

Obstetrical complications						
Number of PNCs	Yes		No		Total	PNC
	No.	I (%)	No.	I (%)	No.	I (%)
Unattended	7	70.0%	3	30.0%	10	100%
Health Center	52	32.2%	65	67.7%	477	100%
CMC	88	38.2%	139	61.7%	178	100%
CHU	86	12.3%	186	87.6%	81	100%
Private medical or clinical office	82	36.1%	205	63.8%	288	100%
Total	343	33.7%	691	66.8%	1034	100%

Khi 2: 26.92, dll: 4, p: 0.001.

Educational level

No link was found between adolescent girls' educational level and the occurrence of obstetrical complications ($p=0.100$).

Adolescent girls' age at marriage

Obstetrical complications were not related to the teenagers' age at marriage ($p=0.542$).

Teenagers' age at first intercourse

More than half (54.6) reported that they did not know their age at first intercourse, 14% said they were 16 years old and 13.5% said they were 17 years old.

Religion

Regardless of religion, the risk of obstetrical complications was the same for all teenagers ($p=0.612$).

Gestational

The average number of pregnancies was one pregnancy with a standard deviation of 0.4 pregnancy, a minimum of one pregnancy and a maximum of 3 pregnancies. The frequency of obstetrical complications in parturient with two or three pregnancies (41.9%) was significantly higher than that (31.6%) found in primigravidae ($p=0.012$).

Parity

There was no significant association between the occurrence of obstetrical complications and parity among adolescent girls ($p=0.060$).

Term of pregnancy

Whatever the term of the pregnancy, the probability of obstetrical complications is identical ($p=0.728$).

The pregnancy follow-up study found that the lower the number of antenatal consultations, the higher the risk of obstetric complications, 70%; 44.5% and 38.7% respectively for pregnant women who did not have any prenatal consultation and those with one (1) and two (2) prenatal consultations. The risk of these complications decreases as the number of antenatal consultations increases, 28.6%; 26.3% and 11.5% respectively for pregnant women who carried out four (4), five (5) and six (6) prenatal consultations. The differences observed were statistically significant ($p = 0.001$).

The study of the location of antenatal consultations reveals that obstetric complications occur more frequently in pregnant women followed in peripheral maternity hospitals and in private practices and clinics with respectively 32.2% (health center), 38.2% (CMC) and 36.1% (private practice and clinic) unlike pregnant women followed in the CHU (12.3%) with a statistically significant difference.

Table 3: Breakdown of adolescent girls who developed obstetrical complications versus those who did not depending on the reason for admission.

Obstetrical complications						
Admission reason	Yes		No		Total	PNC
	No.	I (%)	No.	I (%)		
Labor	151	18.4%	669	81.6%	820	100%
Dystocia	117	90.7%	12	9.3%	129	100%
Hemorrhage	55	98.2%	1	1.8%	56	100%
Others	20	69.0%	9	31.0%	29	100%
Total	343	33.2%	691	66.8%	1034	100%

Khi 2: 396.762, ddl: 3, $p: 0.000$.

Table 5: Breakdown of adolescent girls who developed obstetrical complications versus those who did not depending on the mode of admission.

Obstetrical complications						
Admission mode	Yes		No		Total	PNC
	No.	I (%)	No.	I (%)		
Coming from home	256	29.4%	614	70.6%	870	100%
Evacuee	87	53.0%	77	47.0%	164	100%
Total	343	33.2%	691	66.8%	1034	100%

Khi 2: 34.738, ddl: 1, $p: 0.000$.

Birthing labor was the most frequent reason for admission among pregnant women who did not present obstetric complications, the opposite result in pregnant women who presented obstetric complications (81.6% versus 18.4%). However, hemorrhage and dystocia were the most frequently encountered obstetric complications, 98.2% and 90.7% respectively in the population that

manifested obstetric complications versus 1.8% and 9.3% in those who did not show any complications. The differences observed were statistically significant. Compared to the mode of admission, the risk of obstetric complications is higher in evacuated adolescents, 53% versus 29.4%, the differences observed were statistically significant ($p = 0.00$).

The reason for evacuation

More than half of adolescent girls (56.7%) were evacuated for dystocia, followed by acute fetal distress (12.8%) and hemorrhage with 11.6%.

Status of the new born at birth

Live births were by far the most frequent with 91.3% against 8.7% of stillbirths.

Apgar score at the 5th minute

A total 86.4% good Apgar (≥ 7) and 13.6% bad Apgar (< 7) were recorded.

Maternal death

Study recorded 14 cases of maternal death with a lethality of 14.50 per thousand and a ratio of 1480 deaths per 100,000 live births.

DISCUSSION

Frequency of childbirth among teenagers

During the study period, we recorded 1034 adolescent deliveries out of a total number of 6184 deliveries at the ward, i.e. a frequency of 16.7%.

The frequency of childbirth varies depending on the country and the age limits considered.⁷

West Africa is a major contributor with a frequency of 8% compared to East Asia where it was 5.5%.⁸

Study rate of 16.7% is lower than those of some authors, notably: N'Guembi et al (30.3%) in Central Africa.⁹ Tebeu et col (26.5%) in Cameroon.¹⁰

On the other hand, this rate is higher than those reported by certain African and European series, notably: Traoré B (15.5%) in Mali, Nayama M (10.9%) in Niger; Hamada (2.6%) in Morocco and Soula (1.55%) in French Guyana.^{1,11-13} This difference could be explained by several reasons in particular: the early marriage in Africa linked to cultural, ethnic and religious factors (40 to 50% of married girls aged 13 to 15), poverty and illiteracy.¹⁴

Frequency of obstetric complications among adolescent girls

Out of a total of 6184 deliveries, including 1034 deliveries among adolescent girls, study recorded 343 cases of obstetric complications, i.e. 5.54% of all deliveries and 33.17% of deliveries among adolescent girls. This rate is lower than the one reported by Foumsou et al, (12.8) In Chad.¹⁵

I. Mode of delivery

The majority of births occur by natural routes, corresponding in this study to 60.6% in accordance with the literature.¹⁶

The old notion that deliveries through pelvises that may not be fully grown could expose a disproportionate risk of disproportion and caesarean section is not borne out in practice.

It is possible, as described by Jolly quoted by Dedeker et al, that adolescent girls may benefit from improved myometrial function and tissue elasticity facilitating vaginal delivery.¹⁷

Study results are similar to those of Fousmsou et al in Chad, reporting 82.5% of deliveries by vaginal route, compared with 17.5% by caesarean section.¹⁵

II. Socio-demographic characteristics

Age

The average age of adolescent girls was 17.5 with extremes of 14 and 19, i.e. a standard deviation of 1.2 years.

The incidence of obstetrical complications among adolescent girls increases as they advance in age: 27.5% for the 14-15 age group; 32.8% for the 18-19 age group, in contrast to the control population, where the risk of obstetrical complications decreases as age advances.

The observed differences were not statistically significant $p=0.52$.

The high risk of obstetrical complications in the 18-19 years old age group could be explained by the fact that pregnancy occurs most frequently in this age group during adolescence.

Marital status

The incidence of obstetrical complications is higher among married adolescent girls compared to unmarried teenagers, i.e. 35.9% versus 27.9% with a statistically significant difference ($p=0.0010$). Study result could be explained by the fact that our predominantly Muslim society has customs and traditions that impose marriage before the occurrence of a pregnancy, an out-of-wedlock pregnancy being considered a crime or a family dishonor, as sexual initiation is in most cases related to marriage. In developed countries and some emerging countries in Africa, most adolescent girls are unmarried, contrary to our countries that are predominantly Muslim, especially in Guinea, where the trend towards early fertility is voluntary and considered a means of strengthening the bonds of the couple and the stability of young spouses.¹⁸

Study series confirms this, given that the majority of our teenagers were married (66.05%) and that pregnancy is desired.

It should also be noted that the rate of single people is gradually increasing in our country without reaching the figures for industrialized countries where sexual initiation is not linked to marriage.

Occupation

Occupation is an important factor in the outcome of adolescent girls' pregnancy, particularly for housewives and students who are not engaged in income-generating activities. In our series, 39.4% of the adolescent girls were secondary and university students and 25.4% were housewives.

Most comparative studies have found a difference in socio-economic status between pregnant adolescent girls and their adult counterparts; some studies have even identified it as a risk factor for early motherhood. Lesser, cited by Abbadi, suggests that these young girls find pregnancy as a way to enhance their self-esteem, gain respect, and ultimately escape this difficult social context.¹⁶ Other authors, however, are much less categorical, such as Narrigue, cited by Soula, who reports that the phenomenon can affect all social classes and that therefore socio-economic status does not play a strong determining role in the occurrence of adolescent girls' pregnancies.¹³ This high rate of adolescent girls at home (25.4%) could be explained by the low rate of teenage girls attending school and the distrust of husbands to let their wives undertake other activities outside the home.

Level of education

adolescent girls with a low level of education or who are not attending school were the most exposed to obstetric complications, with an incidence of 38.4% and 34.5% respectively, and these complications decrease as the level of education increases. This is the corollary of illiteracy, with illiterate and ignorant women with a pro-natalist conception wanting to have children from puberty to menopause.

Study high rate of out-of-school adolescent girls (39.7%) is said to be in line with that of the general Guinean population, where 74% are illiterate, 85.33% of whom are female.¹⁹ This fact would be related to:

- The reluctance of parents who will be left to do all the housework.
- Parents' fear of abandoning traditional customs and morals

Age at marriage

The analysis of this parameter reveals that the majority of adolescent girls got married at the age of 18-19, i.e.

57.93%. Obstetrical complications also occur frequently in this age group, i.e. an incidence of 34.1%.

According to Diallo FB this age at marriage in our country varies according to ethnic groups, and the lowest age at marriage (below 15 years) has been found among the Peulh ethnic group, where the young girl often sees her first menstrual period only in the family home, the second appearance being in the husband's home, and sometimes pregnancy occurs during the first intercourse.²⁰

Age at first sexual intercourse

It appears from the study that the first sexual intercourse takes place in most cases at the age of 16 followed by the age of 17 with respectively 28.52% and 28.04%. 11.21% of women did not want to engage in this question, which is, most often, a taboo.

Early sexual intercourse is partly related to early marriage and the collapse of certain traditional values.

Religion

The analysis of this parameter shows that our teenage adolescent girls' girls are mostly Muslim (96.61%). This percentage of Muslims is related to that of the different religious groups in Guinea, where 95% of the population practice Islam.¹⁹

III. Antecedents gestity

The average gestity in the whole sample was one (1) with extremes of one (1) and 3 pregnancies, a standard deviation of 0.4 pregnancy.

The risk of obstetrical complications was higher in among adolescent girls who had been pregnant more than once (pauci gesture) i.e. 41.9% versus 31.6% incidence in primigravidae with a significant difference ($p=0.012$). Thus, gesture is a risk factor for obstetrical complications among adolescent girls.

Parity

The average parity in the whole sample was 1 the delivery with extremes of 1 and 3 deliveries, a standard deviation of 0.4 delivery.

The risk of obstetrical complications was higher among adolescents who had already been mothers (pauci pare) than those who were at their first delivery (primi pare), i.e. 40% versus 32.1% incidence without a statistically significant difference ($p=0.06$). Study results agree with those of Bah MH, and cervix "one of the most serious issues is undoubtedly the risk of new pregnancy in a very young mother making the teenager, as is often seen in our societies, the mother of 2 or 3 children".¹⁴

Study adolescent girls had a history of female genital mutilation in 99.12%, genital mutilation dominated by excision (98.93%). Yet excision is a traditional practice, having no basis with the Muslim religion, contrary to what many people think.

At the national level, measures are currently being considered to curb this scourge.

Term of pregnancy

The analysis of this parameter reveals that the risk of obstetrical complication is about the same whether the pregnancy is at term or not, i.e. 33.1% versus 35.6% with no statistically significant difference.

Number of prenatal consultations

The analysis of the pregnancy follow-up showed that the lower the number of prenatal consultations, the higher the frequency of obstetrical complications, i.e. 70%; 44.44% and 38.76% respectively for gestants who had no prenatal consultation and those with one (1) and two (2) prenatal consultations. The frequency of these complications decreases as the number of prenatal consultations increases, i.e. 73.74%; 73.68% and 88.48% respectively for pregnant women who have had four (4), five (5) and six (6) prenatal consultations. The differences observed were statistically significant ($p=0.001$).

The different age-related risks are associated with a significant risk of late detection of complications related to unattended pregnancies.

In general, prenatal monitoring was not of good quality in study series. This poor quality of prenatal monitoring could be explained by:

- The late notification of pregnancy, either because it is unwanted or hidden from the entourage.
- The lack of information on the importance of prenatal consultations in the monitoring of pregnancy and prognosis of childbirth.

But better than the number of prenatal consultations, it is rather the quality of the prenatal consultation that is of prime importance

Venues of prenatal consultations

The analysis of this parameter reveals that obstetrical complications occur more frequently in pregnant women attended in peripheral maternity hospitals and in private practices and clinics with respectively 32.2% (health centre), 38% (CMC) and 36.1% (private practices and clinics) as opposed to pregnant women attended in the Teaching Hospital -CHU- (17.2%) with a statistically significant difference. This result could be explained by the fact that in the CHU antenatal consultations are carried out by specialist doctors, whereas in peripheral

maternity hospitals, antenatal monitoring is most often carried out by paramedical staff, including in private facilities, most of which are clandestine.

Mode of admission

The analysis of this parameter reveals that the risk of obstetrical complications is higher among transferred adolescent girls, i.e. 52% versus 29.4%, the differences observed were statistically significant ($p=0.00$).

Reason for admission

Labour was the most frequent reason for admission in pregnant women who had not had any obstetrical complications, with the opposite result in pregnant women who had had obstetrical complications (81.6% versus 18.4%). However, hemorrhage and dystocia were the most common obstetrical complications, 98.2% and 90.3% respectively in the study population versus 1.8% and 9.3% in the control population. The differences observed were statistically significant ($p=0.00$).

Reason for evacuation

The most frequent reason for transfer was dystocia (41.46% of transferees), followed by delivery labour and bleeding (15.24% and 11.59% respectively).

IV. Prognosis

Maternal prognosis

Maternal morbidity

Complications encountered were more frequent during labour than in postpartum, i.e. 74.89% versus 25.11%. During labour, dystocia remains the most frequent complication encountered, i.e. 58.6%, followed by retroplacental haematoma and eclampsia with 11.7% and 11.1% respectively.

In the postpartum period, anaemia was the most frequent complication, 38.3%, followed by high blood pressure and postpartum hemorrhage with 23.5% and 18.26% respectively. Study results are different from those reported by some authors, notably Foumsou. L in Chad, reporting perineal tearing and eclampsia during labour and postpartum haemorrhage.¹⁵ Maternal age is a statistically established risk factor for vascular-renal syndrome (high blood pressure, preeclampsia, eclampsia, retroplacental haematoma), and the literature insists on taking age into account in its prevention.¹

Maternal mortality

Study recorded 14 cases of maternal deaths, i.e. a lethality of 14.50 per thousand and a ratio of 1480 deaths per 100,000 live births. The causes of such deaths were

dominated by hypovolemic shock due to postpartum hemorrhage (7 cases), retroplacental hematoma (2 cases), placenta previa (1 case), eclamptic state (3 cases) and puerperal infection (1 case). The maternal death ratio of teenagers in study series was lower than those reported by Nguessan in Côte d'Ivoire, Lankoandé in Ouagadougou and Mwobodo in Nigeria, which are respectively: 4040 deaths per 100,000 live births; 4081 deaths per 100,000 live births; 5415 deaths per 100,000 live births.²¹⁻²³

Study adolescent girl's maternal death rate was higher than those of Traoré in Segou, Mali, and Nayama in Niamey, which reported 0.3% and 0.6%, respectively.^{11,12}

The high maternal mortality in our series could be partly explained by the lack of blood products as 64.3% of maternal deaths were due to haemorrhage.

According to Nwobodo and Panti, eclampsia is the leading cause of death in teenage girls (53.9%).²³ On the other hand, it has often been revealed in our context that delay in the management of obstetric emergencies (late obstetric evacuation; lack of kits; occupied operating theatre) was the main factor favoring maternal deaths in general.

Prognosis of the new-born

Study recorded 91.25% live births against 8.74% mortality with 18 twin deliveries.

The Apgar score is one of the determining factors in the morbidity of the newborn. The adaptation of the newborn to ectopic life was good (Apgar greater than or equal to 7) in 78.80% and poor in 12.45% of cases within 5 minutes of life.

Study recorded 92 cases of stillbirths, i.e. a rate of 8.74%. The causes of this stillbirth were broken down as follows:

- Prematurity 22 cases (23.91%)
- Severe malaria in the mother 6 cases (6.52%)
- Pre-eclampsia and eclampsia 46 cases (50%)
- And retroplacental hematoma 18 cases (19.56%).

All the authors agree that the young age of the mother plays a role in fetal prognosis, as the frequency of perinatal mortality is higher among newborns born to adolescent girls.²⁴

CONCLUSION

The frequency of childbirth among adolescent girls was 16.7%. Obstetrical complications encountered among such adolescent girls were dominated by dystocia, 3rd quarter hemorrhage, post-partum hemorrhage, preeclampsia and eclampsia. These complications concerned adolescent girls aged 18 to 19, Christian, and

skin and skin lesions secondary school or university students. Factors associated with such complications were marital status, gestational age, number of prenatal consultations, venue of prenatal consultation, reason and mode of admission.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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