

Obstetrical Emergencies in Teenagers at the Reference Health Centre of Commune VI, District of Bamako, Mali

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Abstract

Introduction: In Mali, the adolescence is characterized by a precocious sexuality, early marriages, immature pregnancies and/or some unwanted pregnancies, and some clandestine abortions. We have undertaken this study in order to study the obstetrical emergencies in the admitted teenagers in the gynecological-obstetrical service of the reference health centre of Commune VI, district of Bamako. **Material and Methods:** It is a descriptive transversal study with prospective data collection in a period of six months. The studied variables were socio-demographic, admission, taking care, morbidity, and maternal-perinatal mortality. **Results:** Our study has recorded 300 obstetrical emergency cases in teenagers in a total number of 884 teenagers admitted for emergency in the service, or a frequency of 33.9%. 96.7% of adolescents were older than 16 years old and 3.3% were less than 15 years old. The teenagers who are not at school represent 123 of 3000, or a rate of 41%, followed by those



who are in primary school with 96 teenagers, or 31%. The teenagers were married in 88.3% of cases, single in 11%, and widowed in 0.3% of cases. Housewives were 70.3% and pupils or students in 25% of cases. Those who had any medical antecedents were 99% of cases (267/300). On the other hand, 3.3% had a previous caesarean (100/300) and 0.3% a previous laparotomy (1/300). They were primigenous (75.5%), primiparous (75.7%), had a past abortion in 4% of cases, and had used contraceptive methods, either 7.7%. The dystocies were the obstetrical emergencies the most represented with 32.3% (97 cases), with 4 cases of uterine breaking, followed by acute fetal pains 21% (63 cases). Pre-eclampsia and eclampsia 20.7% (62 cases), HPP 9.7% (29 cases), and HRP 8% (24 cases). The adolescents who had caesarean birth were 58.7% and natural birth 41.3%; the caesarean indications were dominated by the dystocia (66%) followed by acute foetal pain (13.2%). The maternal prognosis was marked by 14.7 complications, with immediate post-partum haemorrhage (45 cases) at a frequency of 15%, and we recorded 5 death cases, *i.e.*, 1.7%. The causes of death were eclampsia (2), uterine breaking (1), uterine inversion (1) and retro-placenta hematoma (1). The carried-out surgical gestures were the suture of weak parts (50%), the Caesarean (41%), historiography (3 cases) and hysterectomy (2 cases). For prenatal prognosis, the Apgar score was less than or equal to 7 in the first minute in 13.1%. Newborn babies with low birth weight represented 23.6%. The low weight was due either to prematurity or hypotrophy. Our reference rate was 38.7%; the motives of references were such as: prenatal asphyxia with a rate of 56% of referred newborn babies, 21.6% for hypotrophy, 15.5% for prematurity, 4.3% for neonatal infection, 1.7% for macrosomia, and 0.9% for malformation (omphalocele). We must note that 89.5% of newborn babies were alive at birth, while 10.5% were stillborn. We have recorded 23 cases of neonatal death, or 8.6%, all precocious, by perinatal asphyxia (18), prematurity (4), and omphalocele (1). **Conclusion:** Obstetrical emergencies among teenagers were frequent in the gynecological-obstetric service of the CSREF of Commune VI. They were dominated by dystocia and pre-eclampsia/eclampsia. The maternal prognosis was dark, with a high lethality (1.7%); the prenatal prognosis was marked by strong mortality.

Keywords

Obstetrical Emergencies, Adolescent, Bamako, Mali

1. Introduction

Adolescence is not only an age of life rich in possibilities, but also full of risks. Indeed, this phase is characterized by some physical, affective, intellectual, and psychic changes. According to the World Health Organization (WHO), this term includes people aged 10 to 19 years. It is a period that goes between childhood and adulthood [1]. There are one billion adolescents in the world, and it is estimated that by 2030, we will have 2 billion adolescents, 85% of whom will live in developing

countries [2]. Nearly 16 million adolescents give birth around the world every year; 95% of these births happen in Africa. These represent 11% of births globally [1].

The statistics show that in West Africa, 49% of women are married before the age of 19 and 40% in Central Africa [1]. Adolescents represent 22.6% of the Malian population in 2012 [2]. This relatively forgotten category of population nevertheless has some specific, non-negligible health problems: precocious sexuality with problems such as unwanted or precocious pregnancy, and some clandestine abortions [3]. In fact, in Mali, sexuality begins very early, and 70% of adolescents are deflowered before 18; they are less likely to protect themselves or to use contraceptives, which increases accidental pregnancies and their procession of consequences [2]. Mali, with one of the highest proportions of women having given birth before 18 (53%), does not escape this continental phenomenon [4]. The risk of death is very high for a pregnant adolescent before 18-perhaps five [5] times higher than for a pregnant woman aged 20 - 25 years [3].

Seeing the magnitude of obstetrical emergencies in teenagers and their maternal-fetal complications, we have initiated this work in adolescents at the reference health centre of Commune VI in order to improve the situation.

2. Materials and Methods

Obstetrical emergencies include several critical situations requiring rapid intervention: imminent delivery, antepartum and postpartum haemorrhage, threatened preterm delivery, gravid hypertensive pathologies, etc.

We carried out a transversal analytic study on obstetrical emergencies at the gynecological-obstetrical service of CSREF Commune VI (cvi), District of Bamako, from January to June 2020. As the first reference centre at the district hospital, according to the Malian Health Pyramid organization, the CSref is located in the vaguest commune of Bamako and welcomes some parturients who come from many peri-urban districts. Our study was on all admitted adolescents in the gynecological-obstetric service reference health centre of Commune VI during the study period.

The size of the sample has been calculated according to the following formula:

$$N = (Z)^2 \frac{P(1 - P)}{i^2}$$
$$n = \text{size of sample}$$
$$Z = \text{trust interval}$$
$$P = \text{prevalence (frequency)}$$
$$q = 1 - P$$
$$i = \text{margin of error, fixing the precision or the margin of error (i) to 5\% and the trust interval to 95\%}.$$

So, then: $Z = 1.96$, $P = 25\%$. A study carried out by Maiga MI in the gynecological-obstetric service of CHU of Point G on the prognosis of obstetrical emergencies in 2019; 25% of these cases were about teenagers [4]. $P = 1 - 0.25 = 0.75$, so the minimum size is $n: (1.96)^2 \times 0.25 \times 0.70.052 = 288$ cases.

All the admitted teenagers were included in the study for an obstetrical emergency during the period of study.

The data have been typed and analysed in Microsoft Word 2008 and Excel, and the table's graphics have been analysed in SPSS French version 20. The statistical test used is the exact Fisher test, with a significance limit of $P \leq 0.05$.

Ethical considerations: Informed consent was obtained from participants or those assisted by their parents. Authorization was obtained from the hospital administration to conduct the study.

3. Result

3.1. Frequency

Our study has recorded 300 cases of obstetrical emergencies in adolescents, from a total number of 884 teenagers admitted for emergency in the service, *i.e.*, a frequency of 33.9%.

3.2. Age

During our study, the teenagers older or equal to 16 were 96% of the sample, while those who were less or equal to 15 represented 3.3%. The extreme ages were 13 and 19 years; middle age was 17.94 and medium age was 18.

3.3. Level of Instruction

Out-of-school teenagers made up the majority of our sample (see **Table 1**).

Table 1. Sharing out according to the level of instruction.

Level of instruction	Number	Percentage
Not at school	123	41
Primary	96	32
Secondary	72	24
High school	9	3
total	300	100

3.4. Occupation

Around 70% of teenage girls were not in employment (see **Table 2**).

Table 2. Sharing out according to occupation.

Occupation	Number	Percentage
Housewives	211	70.3
Seller-women	7	2.3
Pupils/students	75	25
Tailor	7	2.3
total	300	100

3.5. Marital Status

Married teenagers were in the majority in our sample (see **Table 3**).

Table 3. Sharing out according to the marital status.

Occupation	Number	Percentage
married	265	88.3
bachelors	33	11
widows	2	0.7
total	300	

3.6. Antecedents

Primigravid adolescents made up 75% of our sample, and 3% had a history of caesarean section (see **Table 4**).

Table 4. Sharing out according to the antecedents.

Medical antecedents	Number	Percentage
Medical antecedents		
Diabetes type 1	3	1
Non	97	99
Surgical antecedents		
Appendicitis	1	0.3
Caesarean	10	3.3
laporatomy	1	0.3
Gynecological-obstetrical antecedents		
Gravidity		
primigravida		
paucigeste		
multigeste		
Parity		
Nulliparous	227	75.7
pauciparous	17	5.7
Abortion		
Yes	12	4
Contraceptive use		
Yes	23	7.7

3.7. Chosen Diagnosis

Dystocia was the most frequent diagnosis, followed by SFA and hypertensive disorders, then haemorrhage (see **Table 5**).

Table 5. Sharing out according to the chosen diagnosis.

Chosen diagnosis	Number	Percentage
Mechanical/dynamic dystocies	97	32.3
SFA	63	21
Pre-eclampsia/eclampsia	62	20.7
HPPI	29	9.7
HRP	24	8
Premature birth	11	3.7
RPM	9	3
Late abortion	4	1.3
PP recovering haemorrhage	1	0.3
Total	300	100

3.8. Delivery Route

Natural delivery was preferred in 58% of cases, followed by Caesarean section in 41% (see **Table 6**).

Table 6. Sharing out according to the delivery route.

Delivery route	Number	Percentage
Natural birth		58.7
Caesarean		41.3

3.9. Caesarean Indications

The reasons for caesarean section were dystocia in the majority of cases, followed by SFA (see **Table 7**).

Table 7. Caesarean indications.

Caesarean indication	Number	Percentage
dystocies	82	66.2
SFA	17	13.7
HRP	11	8.8
Pre-eclampsia/eclampsia	14	11.3
Total	124	100

3.10. Carried out Surgical Gestures

Two cases of hysterectomy were performed for uterine rupture and post-partum haemorrhage (see **Table 8**).

Table 8. Sharing out according to the surgical gestes carried out.

Surgical gestes	Number	Percentage
Caesarean	124	47.5
Suture weak area	132	50.6
hysterectomy	2	0.8
hystetorraphy	3	1.0
Total	261	100

3.11. Complications

Immediate postpartum hemorrhage was the major complication (**Table 9**).

Table 9. Sharing out according to maternal complications.

Maternal complications	Number	Percentage
any complication	242	80.6
HPPI	45	15
Severe anaemia	8	2.7
OAP	5	1.7
Total	300	100

3.12. Correlation between the Chosen Diagnosis and the Prenatal Prognosis

In our study, there was a statistically significant correlation between diagnosis on admission and perinatal prognosis, with $P = 0.0004$ (**Table 10**).

Table 10. Correlation between the chosen diagnosis and the perinatal prognosis.

Retained diagnosis	Perinatal prognostic		
	alive	dead born	Neonatal death
HRP	9	11	4
Dystocies	86	6	6
Pre-eclampsia/eclampsia	54	6	2
SFA	55	0	8
RPM	7	0	2
Precocious delivery			
PP covering	0	1	0
Total	216	28	23

3.13. Correlation between the Chosen Diagnosis and the Maternal Prognosis

There was also a statistically significant correlation between admission diagnosis and maternal prognosis, with $P = 0.0005$ (Table 11).

Table 11. Correlation between the chosen diagnosis and maternal prognosis.

Retained diagnosis	Maternal prognosis			
	Recovery	complication	death	total
HRP	21	2	1	24
Dystocies	92	5	0	97
Pre-eclampsia/eclampsia	50	9	2	61
SFA	44	19	0	63
RPM	9	0	0	9
Late abortion	4	0	0	4
Immature delivery	8	3	0	11
HPPI	13	15	2	30
PP covering	1	0	0	1
Total	242	53	5	300

4. Discussion

4.1. Frequency

Our study has recorded a frequency of 33.9% of obstetrical emergency cases in adolescents. This frequency is higher than that of Maiga IM [4], who found a frequency of 25%, and it is inferior to that of Maiga D [5], who found a frequency of 40.9%.

These differences could be explained by the study. Indeed, our study was carried out in a second reference structure of the health pyramid.

4.2. Social-Demographic Characteristic

The age gap most represented was that of those aged 16 or older, with a rate of 96.7. This is higher than that of Dolo IT [6], who has found a rate of 50.5%, and that of Dicko OH [7], who has found a frequency of 55.5%. Adolescent girls aged 15 or younger were numerous, with a frequency of 3.3%. This could be explained by the rarity of sexual activity and/or a menstrual cycle usually anovular in this age gap.

4.3. The Level of Instruction

The instruction contributes to the health of children and facilitates the resort to information and to the suggested services. Those who are not students represented

41% of adolescents. This result is inferior to those of Diane H [8] and Balde MM [9], who found respectively 80.8% and 60%. This statistical difference could be explained by some improvements, thanks to the intention that this one aroused worldwide [10].

4.4. The Occupation and Marital Status

Housewives represented 70.3%. Other authors have also found high frequencies: Dembele F [11], Dembele S [12], and Balde MM [9] have found 95.6%, 63.2%, and 88%, respectively. This can be justified by the fact that adolescents drop out of school because of precocious marriage and/or pregnancy. This affects their health and reduces their chance to work. In Africa, more than 50% of girls give birth to their first baby before the age of 21 [10]. Married adolescents represented 88.3%; 11% were bachelors, and 0.7% were widows. Dicko OH [7], Dembele F [11], and Konaté B [13] have found 85.3%, 86.9%, and 62.8%, respectively. These high rates of married people, comparable to our study, are imputable to the precocious marriages which prevail in our African countries. In Afghanistan and in Bangladesh, girls were married before 18 in 54% of cases, respectively [14].

4.5. The Gravidity

The majority of adolescents were in their first pregnancy, 75.3%. This result is lower than that of Dicko OH [7], a past abortion. It is higher than that of Dembele F [14], who found a rate of 0.67%. Numerous studies have shown the weak use of contraceptives among adolescents, and it is considered a determining factor in pregnancy.

4.6. The Use of Contraceptive Methods

In our study, a minority of adolescents (7.7%) used at least one contraceptive method. This result is inferior to those of Dicho OH [7] and Konaté B [13], who found 9.1% and 16.7%, respectively. This low frequency could be explained by the population's non-use of contraceptives, not because of a lack of communication but rather due to certain prejudices and cultural factors.

4.7. Prenatal Consultation

The goal of the prenatal consultation is to screen for pregnancies at risk and keep the woman safe during the pregnancy, to permit her to deliver a healthy child in order to teach her how to take care of the newborn. In our study, 21.1% of adolescents have not undergone any prenatal consultation. This frequency is inferior to that of Dembele S [12], who found 58%, higher than that of Dembele F [11], who found a frequency of 9.38%, and comparable to that of Konate B [13], who found 21.1%. These differences could be justified by the fact that, in the district, there are many means of communication about the importance of prenatal consultation and people are near the health centre.

4.8. The Conditions of Admission

In our section, the majority (55%) of patients have been evacuated, and 45% have come by themselves. On the other hand, Konaté B [13] found 7.7% and 71.2%, respectively. This statistical difference is explained by the demography of the commune VI. Maiga MI [14] found a higher frequency of evacuated patients at 66.5%. This frequency shows that the university hospital receives more evacuations than the reference health centres (CSREF). The principal reasons for evacuation were, among other things, delivery work, arterial hypertension, stationary dilatation, acute fetal pain, immature pelvis, immediate postpartum haemorrhage, prolonged work, and metrorragies. Uterine and pelvic immaturity represent elements favoring dystocic birth [15]. Therefore, delivery in adolescents is considered a delivery at risk according to numerous authors [5] [10].

4.9. The Chosen Diagnosis at Admission

Dystocia has been the principal emergency with 32.3; this result is less than that of Konaté B [13], who had found a frequency of 63.1%. This rate was clearly higher than that of Maiga IM [4], who had a frequency of 23.8%. An age less than 18 is a factor of dystocia [16]. Pre-eclampsia/eclampsia represented 20.7% of obstetrical emergencies in our study after dystocia [5]. This result is inferior to those of Baldé MM [9] and Maiga M [4], who had found respectively 35% and 48.1%. Diané H [8] has found a frequency close to ours (22.72%). The postpartum haemorrhage has represented 9.4% of obstetrical emergencies. Diané H [8], Baldé [9], and Dembélé F [11] had found respectively 7%, 2.9%, and 1.56%. These differences are explained by the fact that our study has been carried out in a reference health centre, which is the second resort of care according to the health pyramid. According to the literature, the most frequent delivery route in adolescents is natural birth.

4.10. Delivery Route

The natural deliveries represented 58.7%; this rate is higher than that of Konaté B [13], who found 29.9%, and lower than that of Dembélé F [11], who obtained a frequency of 83.85%.

Instrumental extraction in adolescents varies from 8.4% to 26.9%, for which the principal indication is poor maternal cooperation during the expulsive phase, linked to defective psychological preparation of adolescents in order to give birth in good condition (12.15%). In our study, extraction by cup, as it is the only instrument used in labour, was necessary in 48 cases, or 27.3% of natural births. This result is higher than that of Dicko OH [7], who found 20.25%, and close to that of Diané H [7], who obtained a frequency of 29.31%. Caesarean sections represented 41.3% of all deliveries in these adolescents. This percentage is lower than that of Konaté B [13] (78%); on the other hand, Dembélé F [10] found a rate of 16.15%. This can be explained by the high frequency of caesareans in the hospital. Adolescents represent three times greater risk of undergoing caesarean

for mechanical dystocias [7]. Dystocia was the principal indication for caesarean, accounting for 66.2%.

Our result is higher than those of many authors: Dicko OH [7] 49.5%; Konaté B [13] 63.1%; and Diané H [8] 35.31%. This is explained by the fact that development in women ends only at around 18 years of age and that the expulsion canal reaches maturity only at around 20 to 21 years of age, even though bone age varies noticeably from one woman to another and from one population to another according to nutritional state [1].

4.11. The Maternal-Fetal Prognosis

The adolescents had complications in 14.7% of cases, the major one being immediate postpartum haemorrhage (45 cases), with a frequency of 15%; we recorded 5 deaths (1.7%). The causes of death were eclampsia (2 cases), uterine rupture (1 case), uterine inversion (1 case), and retroplacental haematoma (1 case). According to the WHO, adolescents are 4 times more susceptible than women older than 20 to die from causes linked to pregnancy [2]. Thiam O *et al.* [17] reported a mortality rate of 10.7%. This difference shows the improvement in access to obstetrical emergency care and the quality of the services offered.

4.12. The Assessment of Apgar Score

It is one of the assessment methods of the newborns' conditions since birth. This score is normal between seven and ten points at the first minute, mediocre at four to six, and bad from zero to three. In our series, prenatal asphyxia has been defined as all newborns whose Apgar score is less than seven [7]. The Apgar score was inferior to 7 at the first minute in 13.1%. This result is higher than those of Dicko OH [7] and Dembélé F [11], who had found, respectively, 10%, 3.8%, and 8.72%.

Low birth weight at delivery is two times more frequent in adolescents [18] than in adults. Newborn babies with low birth weight represented 23.6%. This result was higher than those of Dicko OH [7] and Dembélé F [11], who found 13.33% and 10.26%, respectively. This low weight is attributable either to prematurity, in which the weight corresponds to gestational age, or to hypotrophy, in which the weight is low during pregnancy. Transfer to neonatology varies according to the authors (Diané and Dicko) between 22% and 41%; our reference rate was 38.7%. The main reasons were as follows: perinatal asphyxia (56%), hypotrophy (1.6%), prematurity (15.5%), neonatal infection (4.3%), macrosomia (1.7%), and malformation (0.9%) (omphalocele). In our study, the vast majority of newborns were alive at delivery (89.5%), while a minority (0.5%) were stillborn. We recorded 8.6% early neonatal deaths (23 cases). The causes of these deaths were perinatal asphyxia (18 cases), prematurity (4 cases), and omphalocele (1 case). In 2017, the majority of neonatal deaths (75%) occurred during the first week of life, and about one million newborns died in the first 24 minutes. Premature deliveries, complications during delivery (birth asphyxia), and congenital malformations were the causes of these neonatal deaths [19]. There was a statistically significant

correlation in our study between the diagnosis at admission and maternal prognosis ($P = 0.0005$).

5. Conclusion

Obstetrical emergencies in adolescents are frequent in the gynecological-obstetrics of the CSREF of Commune VI. The age group equal to or above 16 was the most represented. They were dominated by dystocies and pre-eclampsia/eclampsia. The maternal prognosis was normal in the majority of cases and marked by some complications such as uterine rupture with some hysterectomies and hystero-graphy, and some maternal deaths. The prenatal consultation is essential for detecting the risk factors and defining the delivery route. The perinatal prognosis was marked by precocious neonatal mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Organisation mondiale de la santé (OMS) (1998) Journée mondiale de la santé: Maternité sans risques: Retarder les naissances. 1-3.
- [2] Cellule de planification et de Statistiques, Ministère de la Santé, Direction Nationale de la Statistique et de l'Informatique Ministère de l'Économie, de l'Industrie et du commerce (2012) Enquête démographique et de la santé (EDS V). 577.
- [3] Moumouni, H. (1997) Problèmes et Défis et Aspirations des adolescentes en matière de la santé de la reproduction: Cas du quartier de «Golf» de Niamey. Thesis, Faculté des sciences de la santé (FSS) de Niamey.
- [4] Falcoa, S. (2010) Modèles murins effets préventifs de l'entraînement physique. Thesis, Université de Montréal. <http://handie.net/1866/3972>
- [5] Maiga, D. (2010) Les urgences obstétricales à l'hôpital Régional de Gao à propos de 203 cas. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
- [6] Dolo, I.T. (2019) Complications obstétricales chez l'adolescente à l'hôpital Fousseyni Daou de Kayes. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
- [7] Dicko, O.H. (2019) Accouchement chez les adolescentes au centre de santé de la commune CVI du district de Bamako. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
- [8] Diane, H. (2011) Accouchement chez les adolescentes au centre de santé de référence de la commune V de Bamako. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
- [9] Baldé, M.M. (2019) Mortalité maternelle chez les adolescentes à l'hôpital Fousseyni Daou de Kayes sur une période de 10 ans. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
- [10] Loua, S. (1998) Current State of Girls' and Women's Education in Mali. Constraints and Challenges. *Revue Internationale d'Education de Sévres*, 103-113. <https://doi.org/10.4000/ries.6571>
- [11] Dembele, F. (2015) Accouchement chez l'adolescente au centre de santé de référence

- de la commune IV du district de Bamako. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
- [12] Dembélé, S. (2012) Accouchement chez l'adolescente au centre de santé de référence de Dioila. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
 - [13] Konaté, B. (2010) Urgences gyneco-obstetricales chez l'adolescente. Master's Thesis, Université des sciences, des techniques et des technologies de Bamako (USTTB).
 - [14] Iknane, A.G., Cissé, I.A., Touré, M., Kanté, S., Diawara, A., Thiero, T.H., *et al.* (2011) Prévalence des mariages précoces dans les regions septentrionales du Mali. *Mali Sante Publique*, **1**, 110-113. <https://www.revues.ml>
 - [15] Gabozy, I. (2002) Les urgences gynéco-obstétricales chez les adolescentes à la maternité ISSIAKA GABOZY de Niamey. Master's Thesis, Université Abdou Moumouni.
 - [16] Comité éditorial de l'UVMaF (2014) Dystocie mécanique. 21. <http://www.cerimes.fr>
 - [17] Thiam, O., Cissé, M.L., Gaye, A., Diouf, A. and Morceau, J.C. (2014) Mortalité maternelle au centre de santé de Roi Baudouin de (Dakar-Senegal): About 308 cas. *Mali Medical*, **29**, 19-24. <https://www.bibliosante.ml>
 - [18] Olukoya, P. (2001) Avortement à risque chez les adolescentes. *International Journal of Gynecology and Obstetrics*, **75**, 137-147. [https://doi.org/10.1016/S0020-7292\(01\)00370-8](https://doi.org/10.1016/S0020-7292(01)00370-8)
 - [19] Organisation mondiale de la santé (OMS) (2020) Nouveau-nés: Améliorer leur survie et leur bien-être. <https://www.who.int>