

First-line treatment of non-haemorrhagic early miscarriage in gynaecological emergencies in public hospitals on Reunion Island in 2022

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Abstract

Introduction: The prevalence of early spontaneous pregnancy loss (ESPL) is 12% for all pregnancies combined, and can be managed surgically or non-surgically. Non-surgical treatment is possible with in-town care. Health insurance reimbursement records revealed that the quotation for ESPL management in towns was very scarcely used in Reunion Island. Patients could benefit from more comprehensive care if they were seen in a local practice rather than in a hospital. However, the number of patients treated in hospital is unknown in Reunion Island. The primary outcome was to determine the first-line treatment preferred by patients with non-haemorrhagic ESPL in public hospitals in Reunion Island in 2022.

Method: This cross-sectional descriptive study involved several hospital centres, with retrospective collection by review of gynaecological emergency department records from public hospitals in Reunion Island.

Results: From January to December 2022, 947 patients were included in the four public hospitals of Reunion Island. Results varied slightly between centres. Non-surgical treatment as first-line therapy was chosen by 84 to 99% of women, depending on the centre; 42 to 69% received expectant management and 25 to 46% received pharmacological management (misoprostol). One to 16% of patients preferred immediate surgical management. The average timing of patient visits was mid-day.

Conclusion: ESPL were largely treated by a non-surgical method as first-line treatment in public hospitals of Reunion Island in 2022. This encourages the creation of an out-of-hospital care network by the healthcare professionals concerned.

Introduction

General medicine deals with all types of patients, from infants to the elderly, including pregnant women. The birth rate in Réunion is 15.3 per thousand, which is higher than that of mainland France (10.9 per thousand)[1].

Abdominal pain and metrorrhagia during the first trimester of pregnancy are common in general practice. These are signs suggestive of early spontaneous pregnancy loss (ESPL)[2]. In the literature, the prevalence of ESPL, all pregnancies combined, is 10–15% [3] ESPL, strictly defined as occurring before 14 weeks of amenorrhea, includes several categories: intrauterine pregnancy loss, complete and incomplete early miscarriage [4].

The traditional treatment for ESPL is surgical treatment consisting of endometrial aspiration. Since the 2000s, medical management with misoprostol has become widespread due to its similar efficacy and adverse effect rates compared to the surgical method [5]. Finally, the last possible treatment for ESPL is monitoring the natural evacuation of the intrauterine contents, also known as expectant management.

The treatment of ESPL is summarised in Fig. 1 [4].

Since 2018, there has been a procedure coding the management of a miscarriage (PCMM) in outpatient medicine for patients receiving medical treatment. It is rarely used in Réunion [6].

The main objective of the study was to determine the first-line treatment preferred by patients diagnosed with non-haemorrhagic ESPL in the four public hospitals in Réunion in 2022.

The secondary objectives were to compare: the characteristics of patients according to the treatment chosen, the number of PCMM carried out in Réunion in 2022 with the rate of drug treatments carried out in hospitals, and finally the results of the four hospitals.

Method

Four studies were conducted in parallel, each in one of the public hospitals in Réunion. They were descriptive, cross-sectional studies with retrospective data collection in the gynaecological and obstetric emergency departments of these hospitals.

All adult patients diagnosed with ESPL in the gynaecological-obstetric emergency department were included.

The exclusion criteria were patients with a pregnancy of more than 14 weeks of amenorrhoea and haemorrhagic miscarriage leaving the patient with no choice of treatment [4]. This was defined as significant metrorrhagia combined with one or more signs of haemorrhagic shock: Blood pressure (BP) < 90 mmHg, diastolic BP < 60 mmHg, tachycardia > 120 bpm, cold extremities, lipothymia or malaise.

A pre-selection was carried out by the Medical Information Department (DIM) based on the following criteria: metrorrhagia, abdominal-pelvic pain, misoprostol, miscarriage, for the South University Hospital Centre (CHU) of Réunion and the East Réunion Hospital Group (GHER). For the North University Hospital and the West Réunion Hospital Centre (CHOR), a systematic review of visits to the gynaecological and obstetric emergency departments was carried out.

The variables selected were as follows: date and time of consultation, reason for admission, age, referral by a colleague or spontaneous arrival of the patient, gestational age, number of previous pregnancies and deliveries, diagnosis and treatment proposed on the day of consultation.

These data were analysed using Microsoft Excel® software.

As the study did not involve any modification to standard diagnostic or therapeutic patient management, and relied exclusively on data collected during routine clinical care, it falls outside the scope of the French Jardé Law (Loi n° 2012 – 300 of 5 March 2012, as amended, relating to research involving human subjects). Consequently, this study did not require submission to, or approval by, a French Comité de Protection des Personnes (CPP).

The ethics committee of the Collège National des Généralistes Enseignants (CNGE) was consulted and gave a favourable opinion: opinion no. 090323459.

In accordance with French regulations governing retrospective/non-interventional research, the study was conducted in compliance with Reference Methodology MR-004 of the French Data Protection Authority (Commission Nationale de l'Informatique et des Libertés, CNIL).

Regarding patient consent, procedures differed according to the participating center. At CHU Sud, CHOR and GHER, patient consent was presumed on a collective basis; patients were informed and could express their refusal to participate at any time during the study. At CHU Nord, individual written informed consent was obtained from each patient.

Results

The overall study population consisted of 947 patients, distributed according to the flow chart shown in Fig. 2.

The different variables studied are summarised in Table 1.

Table 1
Baseline characteristics and management of patients with early spontaneous pregnancy loss, by hospital site

Variable	n	CHU Nord	CHU Sud	GHER	CHOR
Quantitative variables: mean (SD)					
Age (years)	947	31.30 (7.09)	31.60 (6.83)	30.30 (6.28)	30.60 (6.51)
Gravidity	933	3.39 (2.41)	3.19 (2.04)	4.10 (3.16)	3.20 (2.60)
Parity	936	1.60 (1.91)	1.44 (1.47)	2.00 (2.12)	1.19 (1.45)
Time spent in the department (h:min)	945	12:18 (05:03)	12:18 (04:06)	13:42 (04:26)	13:06 (05:16)
Gestational age (weeks)	768	7.96 (2.52)	7.99 (2.06)	7.22 (2.27)	7.11 (1.82)
Qualitative variables: n (%)					
<i>Pregnant</i>					
Not specified	25	17 (7.59)	3 (0.83)	4 (3.88)	1 (0.39)
Yes	922	207 (92.41)	359 (99.17)	99 (96.12)	257 (99.61)
<i>Referral</i>					
Spontaneous visit	579	179 (79.91)	170 (47.22)	63 (61.17)	167 (64.73)
Private practitioner	191	22 (9.82)	130 (36.11)	3 (2.91)	36 (13.95)
Midwife	111	9 (4.02)	48 (13.33)	5 (4.85)	49 (18.99)
Hospital gynaecologist	56	13 (5.80)	11 (3.06)	29 (28.16)	3 (1.16)
Other institution	7	1 (0.45)	1 (0.28)	2 (1.94)	3 (1.16)
Other	1	0 (0.00)	0 (0.00)	1 (0.97)	0 (0.00)
<i>Reason for consultation</i>					
Metrorrhagia	299	94 (41.96)	106 (29.28)	37 (35.92)	62 (24.03)
Abdominal pain	29	17 (7.59)	9 (2.49)	2 (1.94)	1 (0.39)
Abdominal pain and metrorrhagia	207	47 (20.98)	85 (23.48)	30 (29.13)	45 (17.44)
Miscarriage	19	8 (3.57)	0 (0.00)	0 (0.00)	11 (4.26)
Abbreviations: SD, standard deviation; GA, intrauterine pregnancy loss (grossesse arrêtée); FCPI, incomplete early miscarriage (fausse couche précoce incomplète); FCPC, complete early miscarriage (fausse couche précoce complète); CHU, university hospital centre; GHER, East Réunion Hospital Group; CHOR West Réunion Hospital Centre					

Variable	n	CHU Nord	CHU Sud	GHER	CHOR
Quantitative variables: mean (SD)					
Pregnancy termination	276	46 (20.54)	144 (39.78)	6 (5.83)	80 (31.01)
Progression / viability check	114	10 (4.46)	18 (4.97)	28 (27.18)	58 (22.48)
Other	3	2 (0.89)	0 (0.00)	0 (0.00)	1 (0.39)
<i>Diagnosis</i>					
Intrauterine pregnancy loss (GA)	486	95 (42.41)	236 (65.19)	29 (28.16)	126 (48.84)
Incomplete early miscarriage (FCPi)	143	66 (29.46)	28 (7.73)	18 (17.48)	31 (12.02)
Complete early miscarriage (FCPc)	318	63 (28.13)	98 (27.07)	56 (54.37)	101 (39.15)
<i>Treatment</i>					
Non-surgical – Watchful waiting	488	132 (58.93)	151 (41.71)	71 (68.93)	134 (51.94)
Non-surgical – Medication	367	90 (40.18)	168 (46.41)	26 (25.24)	83 (32.17)
Surgical – Endometrial aspiration	92	2 (0.89)	43 (11.88)	6 (5.83)	41 (15.89)
<i>Abbreviations: SD, standard deviation; GA, intrauterine pregnancy loss (grossesse arrêtée); FCPi, incomplete early miscarriage (fausse couche précoce incomplète); FCPc, complete early miscarriage (fausse couche précoce complète); CHU, university hospital centre; GHER, East Réunion Hospital Group; CHOR West Réunion Hospital Centre</i>					

The women were aged between 30.3 and 31.6 years on average. In terms of their gynaecological history, they had had between 3.19 and 4.10 pregnancies and 1.19 to 2.00 deliveries per woman, depending on the centre studied. The average gestational age of the patients was between 7 weeks and 7 weeks + 6 days. Most patients consulted during the middle of the day (between 12:18 p.m. and 1:42 p.m. on average).

Referrals by healthcare professionals were not systematic and, depending on the centre, a significant proportion of patients consulted spontaneously: 179 at the North University Hospital (79.91%), 170 at the South University Hospital (47.22%), 63 at the GHER (61.17%), and 167 at the CHOR (64.73%).

Referrals by private practitioners were more common at the South University Hospital (130 patients, 36.11%) and the CHOR (36 patients, 13.95%). At the GHER, a significant proportion of patients were referred from gynaecology consultations (29 patients, 28.16%).

Among the reasons for consultation, metrorrhagia and abdominal pain associated with metrorrhagia were a more frequent reason for consultation than abdominal pain alone. Referrals for "terminated pregnancy" were found in 20.54% to 39.78% of cases across the centres except the GHER, due to the inclusion methodology applied in this centre.

Emergency department consultations for "progression monitoring" were found mainly at the GHER and CHOR.

The main result of the four studies showed that in 90.3% of cases (n = 855), the centres studied treated ESPL non-surgically as a first-line treatment (84.11% to 99.11% depending on the centre).

Some of the variables studied showed a statistically significant difference depending on the treatment chosen. This was the case for term, regardless of the centre, and for age in all centres except the CHU Nord (Table 2).

Table 2
Patient profiles according to the chosen treatment **CHU Nord**

Variable	n	Expectant mean (SD)	Medication mean (SD)	Surgical mean (SD)	p
Time spent in the department (h:min)	224	12:18 (05:30)	12:06 (04:17)	16:00 (07:04)	0.54
Age (years)	224	31.00 (7.32)	31.60 (6.75)	39.00 (2.83)	0.21
Gravidity	220	3.30 (2.51)	3.48 (2.22)	5.50 (4.95)	0.34
Parity	220	1.52 (1.94)	1.66 (1.77)	4.50 (4.95)	0.27
Gestational age (weeks)	188	7.46 (2.58)	8.62 (2.31)	8.00 (2.83)	< 0.01
Abbreviations: SD, standard deviation. Time spent in the department is expressed in hours:minutes. p values from [specify statistical test].					
CHU Sud					

The number of medical treatments in Réunion's public hospitals represented 855 patients, which was significantly higher than the number of PCMM in Réunion over the same period (n = 20).

There was a difference in results when comparing the first-line treatment used in the different centres. As the studies were conducted separately in each centre, it was not possible to test for a statistically significant difference between centres.

Discussion

During 2022, in the four public hospitals in Réunion, 90.3% of patients treated in gynaecological and obstetric emergency departments for ESPL chose non-surgical treatment.

The majority of them benefited from a wait-and-see approach, explained by the frequency of complete miscarriages, for which the National College of French Gynecologists and Obstetricians (CNGOF) recommends a wait-and-see approach [4].

Our four studies included a total of 947 patients, compared with 21 patients in the study by Kate Levine and Sharon T. Cameron[7], and 55 patients in the study by Schreiber et al.[8]

The results varied depending on whether they were conducted before or after the increased use of misoprostol in routine practice:

- • Before the arrival of misoprostol: 72% in favour of expectant management.
- • After the arrival of misoprostol, depending on the study, the results varied significantly: between 35% and 79.3% in favour of a non-surgical method (medication or expectant management).

Furthermore, most studies analysed the factors influencing patients' choices and women's experiences following pregnancy loss, but rarely the treatment actually delivered in real practice [7–11].

This result has broader relevance across Europe. Prescribing rights and practice patterns for mifepristone and misoprostol in the management of miscarriage vary considerably between European countries: in France, general practitioners have been authorised to dispense misoprostol for outpatient ESPL management since 2018, whereas in the Netherlands this remains debated and underused despite most GPs reporting willingness to provide it once trained [12]. We believe our data from Réunion contribute a concrete example to this ongoing European discussion on shifting early pregnancy loss management towards primary care.

Strengths and weaknesses of the studies

The four studies covered the entire public hospital sector in Réunion. It was an innovative study for the region.

The studies were single-centre and all retrospective in nature, which helped to avoid the Hawthorne effect. However, a multicentre study (with a single overall statistical analysis of data from the four centres) would have increased the external validity.

A selection bias was found at the CHU Sud and GHER hospitals, where there was no systematic review of records. Data extraction could not be carried out entirely by the DIM.

The use of different software programmes in different hospitals may have contributed to this difficulty in reviewing the files in their entirety.

In the near future, the use of shared medical records could prove useful in enabling hospitals to share consultation data, which would facilitate proper patient follow-up between different healthcare professionals (inter-hospital and city–hospital cooperation).

An information bias was found, with disparities in the completion of medical records, which could include missing data (term, age, treatment received). However, the proportion of included patients whose medical records contained missing information was minimal.

Conclusion

In 2022, management of early spontaneous pregnancy loss in Réunion's public hospital sector was predominantly non-surgical, supporting the case for expanding outpatient medical management. However, current reimbursement for misoprostol remains below the doses recommended by the CNGOF [6]. Revaluing the PCMM – to at least cover the cost of the misoprostol dispensed – and extending it to midwives, who make up a third of Réunion's abortion care network, would improve patients' access to care.

Additionally, anxiety and depression affect 10 to 15% of patients after a miscarriage, yet psychological support is not systematically offered in gynaecological and obstetric emergency departments – despite Law No. 2023 – 567 of 7 July 2023 [13], which aims to promote such support. Better coordination between hospital and outpatient care on this front would benefit patients.

This research sheds light on the first-line treatment choice in Réunion. Future work should explore patients' motivations and the influence of healthcare professionals' recommendations on their choices, as well as interview private practitioners to assess the interest, feasibility, and cost-effectiveness of outpatient management. Finally, a prospective study on the experiences of patients treated as outpatients would help build on these findings.

Abbreviations

BP: Blood Pressure

CHOR : West Réunion Hospital Centre

CHU: University Hospital Center

CIC: Clinical Investigation Center

CNGE: Collège National des Généralistes Enseignants

CNIL: French National Commission on Informatics and Liberty

CNGOF: National College of French Gynecologists and Obstetricians

DIM: Medical Information Department

ESPL: Early Spontaneous Pregnancy Loss

Declarations

Ethics approval and consent to participate

All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional and national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

As the study did not involve any modification to standard diagnostic or therapeutic patient management and relied exclusively on data collected during routine clinical care, it falls outside the scope of the French Jardé Law (Loi n° 2012-300 of 5 March 2012, as amended, relating to research involving human subjects). Consequently, this study did not require submission to, or approval by, a French Comité de Protection des Personnes (CPP).

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Regarding patient consent, procedures differed according to the participating center. At CHU Sud, CHOR and GHER, patient consent was presumed on a collective basis; patients were informed and could express their refusal to participate at any time during the study. At CHU Nord, individual written informed consent was obtained from each patient.

Consent for publication

Not applicable

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to French regulatory requirements for clinical research data (Good Clinical Practice archiving rules) but are available from the corresponding author on reasonable request. In accordance with French Good Clinical Practice guidelines, the study protocol, participants' source documents, and all other study-related documents are archived under the responsibility of the investigator for 15 years following the end of the research. No document may be moved or destroyed without the agreement of the sponsor, Centre

Hospitalier Universitaire (CHU) de La Réunion, who will be consulted regarding destruction at the end of the mandatory archiving period.

Competing interests

The authors declare no conflicts of interest.

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Authors' contribution

E.B. conceptualized and designed the study. P.G., M.L., L.M., L.S. participated in data acquisition. P.G. performed the analysis and interpretation. P.G., M.L., L.M., L.S., J.D. wrote the initial manuscript. J.D. and S.L. critically reviewed the manuscript. All authors have read and approved the final manuscript.

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Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work, JD used generative AI tools (ChatGPT and Claude) solely for language editing, to help condense the manuscript, and for the visual formatting of the figures. These tools were not used to generate scientific content, nor for data analysis or interpretation. After using them, the authors reviewed and edited the output and take full responsibility for the content of the article.

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Figures

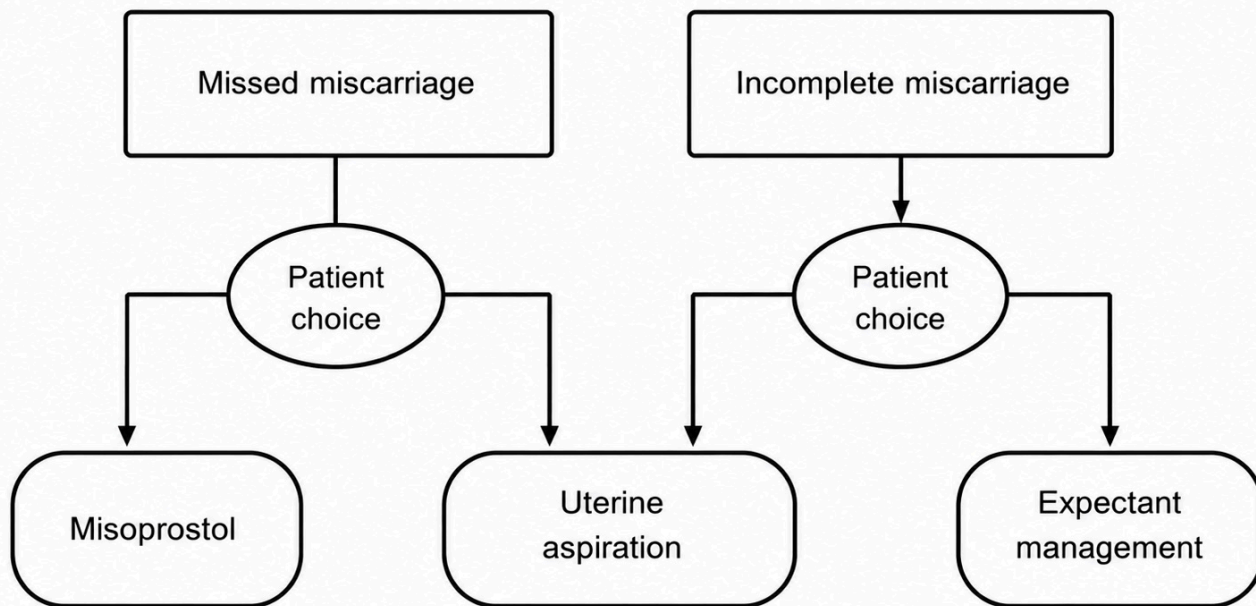


Figure 1. Management of early pregnancy loss according to the 2014 recommendations of the French National College of Gynecologists and Obstetricians (CNGOF).

Figure 1

See image above for figure legend

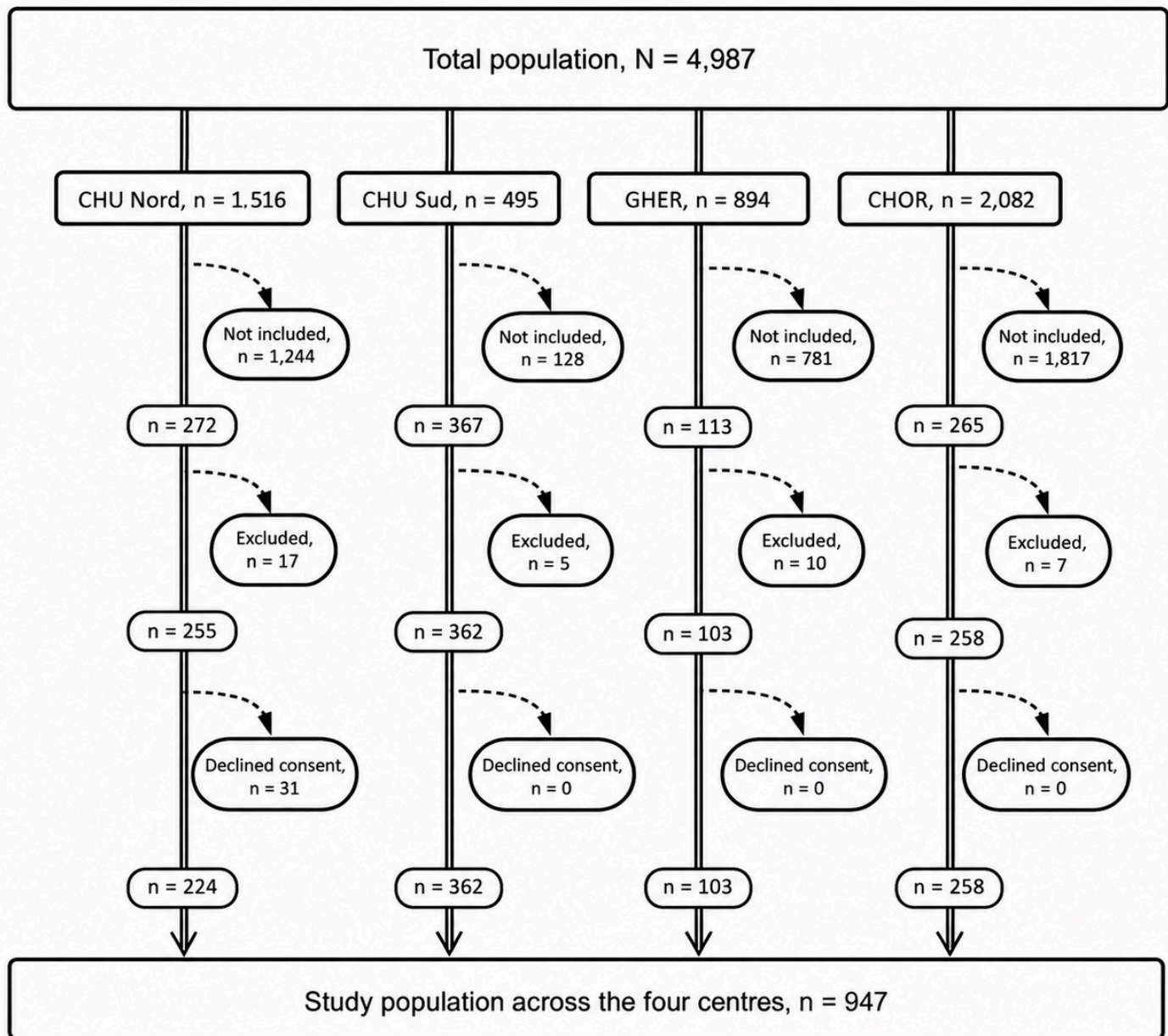


Figure 2 Flow diagram of the study population across the four participating centres.

Figure 2

See image above for figure legend