



Cross-sectional Study

# Patient waiting time analysis for elective gynecologic surgeries in a tertiary training hospital in the Philippines: A retrospective cross-sectional study

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## ABSTRACT

**Objectives:** This study aimed to determine the median waiting time and assess the factors affecting patient waiting time and scheduling for elective gynecologic surgery in a tertiary training hospital in the Philippines.

**Methods:** A retrospective analysis of waiting times for elective gynecologic surgeries was performed. The different time intervals for each step of the process map were determined. Regression models were used to study the relationship between waiting time intervals and demographic data, consideration of malignancy, and surgeries performed.

**Results:** The median waiting time from the date of the first consult to surgery was 154 days. Patients with consideration of malignancy and pelvic organ prolapse had significantly longer intervals from the Waitlist Clinic to actual surgery with regression coefficients of 6.76 and 17.53 days, respectively. Other intervals in the process map did not show significant differences.

**Conclusions:** The median waiting time for elective gynecologic surgeries in a tertiary training institution in the Philippines was longer than global standards. A significant amount of time was spent waiting for diagnostic studies and referral to the Waitlist Clinic. The study recommends regulating and improving systems processes at the hospital and national levels to decrease patient waiting time. Surgical waitlists, referral systems, and benchmarks for safe waiting times should be established.

## 1. Introduction

Elective surgery is a necessary procedure that can be scheduled after adequate preoperative workup and preparation. Demand for elective surgeries has significantly increased in recent years. This is partly due to the aging population, trust in good outcomes of surgical treatments, increased vigilance to surgical conditions, and technological advancements. Waiting lists for elective surgeries have been used to allocate the limited number of daily operations and hospital resources. Over the past years, the long waiting lists have been a source of patient dissatisfaction [1,2].

Patients' waiting time before elective surgery is an important quality indicator of healthcare services. Barriers created by problems with supply and demand may be attributed to financial factors, including insurance coverage, health benefit packages, out-of-pocket money, and geographical factors. Consequences of long waiting times include but are not limited to worsening of the patient's symptoms, decrease in the quality of life, and death [3]. Patient suffering in the form of unrelieved

symptoms should also be considered.

Health policies should focus on identifying problems with the allocation of services and the provision of timely and appropriate interventions. Different institutions have initiated prioritization of patients on the waiting list and setting a maximum waiting period [1,2]. However, in our institution where operating schedule is limited, setting a guarantee period of admission seems difficult.

### 1.1. The hospital setting and process mapping

Residents-in-training conduct daily examinations of patients with various gynecological complaints in the Outpatient Department. A senior resident makes an initial assessment for the presence of a mass or any lesion in the pelvic organs. Subsequently, an ultrasound is requested for confirmation. The patient is then sent home with advice to schedule imaging modalities and follow-up. The transvaginal, transrectal, or transabdominal scans are performed, and on their follow-up, the decision to operate is made based on the clinical diagnosis supported by

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imaging. Preoperative workup in the form of standard laboratory tests is requested. The patient is then referred for preoperative risk assessment and clearance. Once cleared, the patient is assessed by the Assistant Chief Resident. He or she assesses the preparedness of the patient, checks on the availability of blood products for possible use during surgery, and advises the patient to update her insurance coverage.

The Assistant Chief Resident determines the decision to place patients on the waiting list. The surgery schedule is given to a patient by the Chief Resident after assessment in the Admissions Clinic, designated as Waitlist Clinic in this study. Fig. 1 presents a diagrammatic summary of this process.

The General Service of the Department of Obstetrics and Gynecology performs four to five surgeries daily from Monday to Friday. Two slots are allotted for difficult, complex, and long procedures mostly involving malignancy cases. The patients scheduled for surgery are a combination of elective and emergency admissions. As such, postponement of elective admission and surgery are often experienced. Patients who cannot be accommodated are moved to a later date.

There have been limited studies on the medical, professional, economic, and public concerns about surgical waiting times. It is timely to evaluate the patient waiting times and critical factors affecting the scheduling of elective surgeries and propose changes to longstanding processes and practices. Hence, this study aimed to determine the median waiting time for elective gynecologic surgeries and assess the factors affecting patient waiting time and scheduling for elective gynecologic surgery. The results of this study are vital as it provides baseline information for the provision of better healthcare delivery and patient and staff satisfaction.

### 1.2. Operational definition of terms

1. **First consult** is the date of the first consult at the Outpatient Department.
2. **Ultrasound report** is the written report documenting the findings of ultrasound performed by fellows and consultants of the Division of Ultrasound.
3. **Decision to operate** refers to the step in the decision-making process whereby the imaging results are presented by the patient on follow-up. The senior resident then advises the patient on appropriate surgical procedures.

4. **Preoperative workup** refers to the necessary laboratories requested by the General Medicine and Anesthesiology Services to give preoperative risk assessment and clearance. Requested laboratory tests include complete blood count, blood chemistry, chest x-ray, urinalysis, and electrocardiogram. In cases with consideration of malignancies, the Gynecology Continuity Clinic requests for whole abdomen ultrasound.

5. **Preoperative risk assessment** is the risk stratification given by the General Medicine and Anesthesiology Services to the patient for the contemplated procedure.

6. **Assistant Chief Resident** is a fourth-year resident who oversees the management of patients under their service. He or she assesses patients for elective surgery before final evaluation and scheduling by the Chief Resident.

7. **Waitlist Clinic** – Also called Admissions Clinic, the Waitlist Clinic is where the Chief Resident evaluates a patient. When a patient is determined as ready to undergo surgery, she is given dates of admission and surgery.

## 2. Methodology

### 2.1. Study design

This retrospective cross-sectional systems research used existing medical records of patients admitted for elective gynecologic surgery in a government tertiary training hospital in the Philippines.

### 2.2. Description of study procedures

The list of patients scheduled for elective gynecologic surgery was obtained from the Operating Room documentation records. Outpatient charts were retrieved to determine the date of first consult, date of completion of diagnostic tests, date of the decision to operate, date of completion of preoperative workup, and date of preoperative clearance. The medical charts during hospital admission were retrieved to determine the dates of admission and surgery.

### 2.3. Study population

Patients admitted for elective gynecologic surgeries from January to December 2019 under the General Services were included in the study.

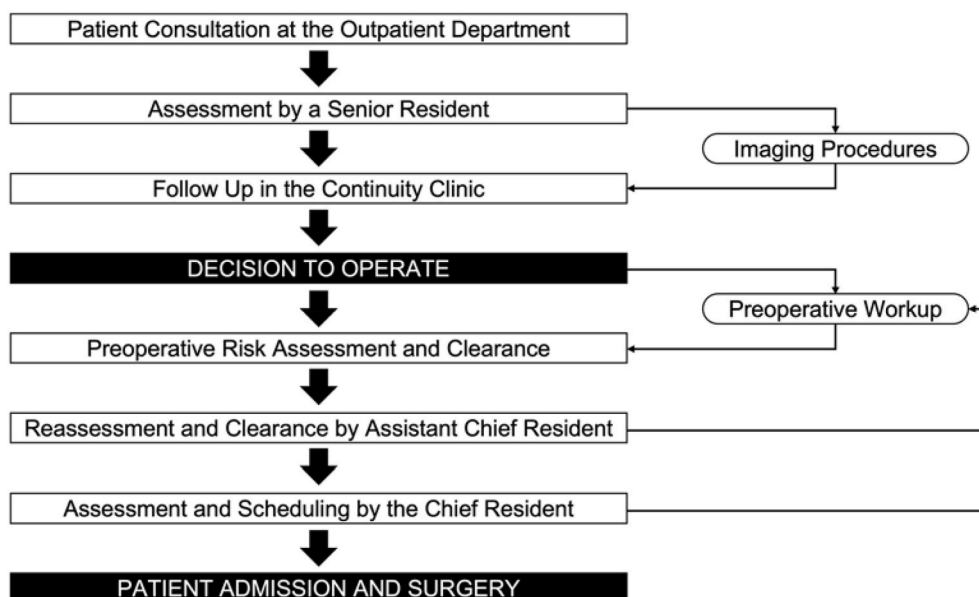


Fig. 1. Patient pathway from first consult to admission and surgery.

Emergency admissions given elective procedure slots and subspecialty elective admissions were excluded. Subspecialty elective cases were excluded from the study as they do not undergo the described process flow. The subspecialty clinics have different preoperative requirements prior to admission and surgery which may affect the time intervals studied (e.g. metastatic workup for malignancy cases).

#### 2.4. Data analysis

Dataset analysis was based on the recorded time interval stage or procedure. The unit of analysis was made in days. Descriptive statistics using means and standard deviations (SD) were used to describe the characteristics of the respondents. Mean, SD, and median were used to determine the time interval per stage. Linear regression analysis was used to assess the association of each characteristic to factors and time intervals—all analyses used STATA 14 (Stata Corp Inc).

#### 2.5. Ethical approval and registration

Ethical approval was obtained from the University of the Philippines Manila Research Ethics Board prior to conduct of the study (UPMREB 2020-016-01). The work has been reported in line with the STROCSS 2021 criteria [4]. This study was registered on the Philippine Health Research Registry available at [registry.healthresearch.ph](http://registry.healthresearch.ph) (UIN PHRR210416-003482).

### 3. Results

In 2019, a total of 509 surgeries were performed by the General Services under elective slots at the Left Central Block Complex. Emergency admissions comprise 149 (29.27%) of these surgeries. There were 360 (70.73%) surgeries performed on patients admitted on an elective basis. Eighty-five charts were not in file when requested from the Medical Records Section. A total of 275 surgeries were included in the final analysis for this study.

#### 3.1. Demographic data

Table 1 summarizes the demographic characteristics of patients

**Table 1**

Demographic characteristics of the study population.

Age	46.84 ± 12.01
<b>Educational Status</b>	
Grade school level	21 (7.64%)
Grade school graduate	32 (11.64%)
High school level	34 (12.36%)
High school graduate	107 (38.91%)
College level	32 (11.64%)
College graduate	32 (11.64%)
Vocational course	17 (6.18%)
<b>Income Bracket<sup>a</sup></b>	
C	6 (2.18%)
D	269 (97.82%)
<b>Place of Residence</b>	
National Capital Region	123 (44.73%)
Region I	4 (1.45%)
Region II	1 (0.36%)
Region III	19 (6.91%)
Region IVA	117 (42.55%)
Region IVB	3 (1.09%)
Region V	2 (0.73%)
Region VI	2 (0.73%)
Region VII	1 (0.36%)
Region VIII	3 (1.09%)

<sup>a</sup> Income brackets or classification are based on economic status. Patients classified under Class D are deemed by the Medical Social Services as needing the most assistance to afford their medical expenses.

included in the study. The average age of patients was 46.84 ± 12.01 years. Majority of the patients were high school graduates (38.91%), under the bracket D income stratification (97.82%), and resided in the National Capital Region (44.73%) and Region 4A (42.55%). None of the patients were under the bracket A and B income (higher socioeconomic status).

#### 3.2. Surgeries performed

Majority (49.09%) underwent exploratory laparotomy, total or extrafascial hysterectomy with or without adnexal surgery (bilateral salpingectomy, bilateral salpingo-oophorectomy, unilateral salpingo-oophorectomy). This was followed by staging surgery for malignancy cases (20.73%) and vaginal hysterectomy (12.36%). The data on surgeries performed is presented in Table 2.

Among these, 96 patients (34.91%) were admitted with consideration of malignancy. Majority (95%) were referred to General Medicine for their preoperative risk assessment, while only 5% were referred to Anesthesiology.

#### 3.3. Time intervals

Table 3 shows the descriptive result in mean and median intervals of each step in the process of scheduling elective gynecologic surgery. Overall, the median interval between the date of the first consult and the actual surgery was 154 days. It took 21 days from the patient's date of the first consult to the ultrasound report. After having an ultrasound performed, the patient's subsequent follow-up and time to decision to operate took 14 days. Patients took 11.5 days to complete their preoperative workup and another 13 days to have risk assessment by General Medicine or Anesthesiology. They were seen at the Admissions Clinic after 39 days and obtained their surgery schedule. From here, surgeries were then performed after 27 days.

With other factors held constant, parameters that showed statistically significant differences in the interval between scheduling and surgery were consideration of malignancy, procedure of vaginal

**Table 2**

Breakdown of surgeries performed in 2019.

Procedure	Number (Percentage)
EL, total or extrafascial hysterectomy ± adnexal surgery	135 (49.09%)
EL, TH BS	42 (15.27%)
EL, TH BSO	87 (31.63%)
EL, TH USO	3 (1.09%)
EL, TH BS, oophorocystectomy	2 (0.73%)
EL, EH BSO	1 (0.36%)
EL, PFC, TH BSO or EH BSO, staging <sup>a</sup>	57 (20.73%)
EL, PFC, TH BSO, staging <sup>a</sup>	55 (20.00%)
EL, PFC, EH BSO, staging <sup>a</sup>	2 (0.73%)
VHAPR, McCall culdoplasty ± BICF	34 (12.36%)
EL, USO or oophorocystectomy	19 (6.91%)
EL, USO	16 (5.82%)
EL, oophorocystectomy	2 (0.73%)
EL, USO, oophorocystectomy	1 (0.36%)
EL, myomectomy	17 (6.18%)
Frozen section planned	6 (2.81%)
EL, USO, FS	4 (1.45%)
EL, USO, FS, staging	2 (0.73%)
Targeted biopsy	3 (1.09%)
EL, excision of cul-de-sac mass, bowel run	1 (0.36%)
Excision of labial mass	1 (0.36%)
Vaginal myomectomy	1 (0.36%)
Anterior and posterior repair	1 (0.36%)

EL: exploratory laparotomy, TH: total hysterectomy, BS: bilateral salpingectomy, USO: unilateral salpingo-oophorectomy, BSO: bilateral salpingo-oophorectomy.

<sup>a</sup> Staging includes bilateral pelvic lymph node dissection, paraaortic lymph node sampling ± random peritoneal biopsy, infracolic omentectomy ± appendectomy.

**Table 3**  
Intervals for elective gynecologic surgery scheduling.

Process Intervals	Mean $\pm$ SD	Median
First consult to ultrasound report	54.05 $\pm$ 164.11	21
Ultrasound report to the decision to operate	47.21 $\pm$ 115.33	14
Decision to operate and preoperative workup	30.79 $\pm$ 84.10	11.5
Preoperative workup to risk assessment	41.03 $\pm$ 226.07	13
Risk assessment to Waitlist Clinic	58.36 $\pm$ 58.09	39
Waitlist Clinic to Surgery	31.86 $\pm$ 25.03	27
First consult to Surgery	212.11 $\pm$ 209.77	154

Intervals are set to days.

hysterectomy, and being a vocational course graduate. The regression coefficient in patients with consideration of malignancy is 6.76 ( $p < 0.05$ ). On average, a malignancy suspect is scheduled 6.76 days later compared to a patient with a benign diagnosis. Vaginal hysterectomy had a regression coefficient of 170 days, assuming other factors are held constant. Lastly, a vocational course graduate was scheduled 17.53 days later compared to different levels of education.

#### 4. Discussion

The need to decrease waiting time for elective surgeries is an important public health concern. Long waiting times have been a consistent cause of patient dissatisfaction and are associated with many adverse patient effects [5]. Therefore, prioritization processes have been used in most hospitals to allocate surgeries and operating room schedules. In this study, emergency admissions were allotted 29.27% of the elective surgery slots. These are patients at the Outpatients Clinics deemed to possibly deteriorate if not operated on and gynecologic emergencies such as ovarian masses in complication and anemia from chronic or acute blood loss. This increases the actual waiting time for elective patients as schedules are pushed back.

The intervals for each step of the scheduling process for elective gynecologic surgery were highlighted. In 2019, the median waiting time from a patient's first consult to surgery was 154 days. Most of this period was spent on waiting for Waitlist Clinic schedule (39 days) and ultrasound schedule (21 days). After being seen at the Waitlist Clinic, a patient then waits a median of 27 days before the surgery date. Scheduling delays can be attributed to both institutional and patient factors. Intervals are dependent on the number of patients requiring ultrasound, daily limit of patients that the Ultrasound Section and Outpatient Clinics can accommodate, and patient-dependent tasks for diagnostics and follow-up. Other patients may take longer to seek follow-up consults and cancel schedules. Patient factors also include socioeconomic barriers such as out-of-pocket expenses and health insurance coverage. These may account for the high standard deviation noted for the different intervals.

Hysterectomy was the most common elective gynecologic procedure performed. In other countries, the median waiting time for hysterectomy was 23–118 days. Waiting time in our institution is longer than those included in the report by the Organization for Economic Cooperation and Development (OECD) Health Statistics [6]. Establishment of maximum waiting time targets is a promising strategy to avoid morbidities and surgical complications. In a retrospective cohort study conducted by Traylor et al. among 277 patients who underwent hysterectomy for benign gynecologic disease from 2012 to 2018, patients with a surgical waitlist time of more than 30 days were 3.22 times more likely to be readmitted [7]. Likewise, they were shown to have an increased frequency of healthcare use and decreased quality of life. Oudhoff and his colleagues conducted a cross-sectional study among 505 patients on surgical waitlists in 27 general hospitals in the Netherlands. Their study demonstrated the diminished psychological health and social life of waitlisted patients using validated questionnaires. The authors recommended early information about the duration and causes of delay to improve patients' acceptance of waiting [8].

A consideration of malignancy was associated with a longer interval from the Waitlist Clinic to surgery. This is in contrast to a prospective case study done by Olson and De Gara (2002). The study provided a quantitative measure of the waiting times among three elective general surgery procedures during a six-week period. Data from 74 patients suggest that patients with consideration of malignancy were scheduled and operated on earlier than those with benign conditions. This reflects prioritization based on the urgency of the surgical procedure in scheduling patients [9]. The longer interval in our study may be attributed to the number of allowed malignancy cases and staging procedures daily. The General Services are allowed to schedule two staging surgeries followed by a maximum of three procedures for benign cases.

Moreover, patients for vaginal hysterectomy were noted to have a longer waiting time for surgery after being seen at the Waitlist Clinic. Physician and patient factors affecting the later surgery schedule for vaginal hysterectomy should be further investigated. These may include perceived difficulty with the procedure, necessity of subspecialty referral, and existing medical illnesses of elderly patients.

A strategy to decrease waiting time is establishing a registry of patients requiring surgery. This should be maintained, regularly monitored, and reordered based on urgency. It is a transparent tool that clinics can use for prioritization strategies given the limited resources and manpower of the hospital. Examples of such tools are severity scoring systems or discipline-specific guidance with individual maximum waiting times. A maximum waiting time guarantee has been instituted in some countries like the United Kingdom, Netherlands, Finland, Sweden, Denmark, and Norway. Prioritization tools have likewise been developed to ensure that patients with higher urgency or severity are treated more quickly [10].

The study also underscores the vital role of the institution as a specialized tertiary hospital providing healthcare services to patients of low socioeconomic status. Most patients being scheduled for elective gynecologic surgeries belong to class D. Of note is the relatively high proportion of patients from Region IVA, a nearby province, seeking consult and schedule for surgery. This should serve as an impetus to examine the available healthcare facilities and services in this area and explore the formulation of relevant referral systems. Facilities capable of performing less specialized surgeries should be identified to reduce patient load and waiting time in tertiary centers. Establishing training programs and facilities for more specialized care in public hospitals may likewise be given priority.

##### 4.1. Strengths and limitations of the study

There is a paucity of studies on the waiting times for general gynecologic procedures both locally and internationally. The study is the first attempt to elucidate the time intervals spent by patients on each step of the process flow for patients admitted by the General Services in the local setting. Data are from a single hospital; the results may be difficult to generalize to other hospitals with different functional characteristics such as size, services, and case mix. The study only included surgeries performed by residents-in-training and excluded patients admitted by the subspecialty services. Whether or not the patients missed follow-up schedules were not assessed in the study. Underlying medical conditions which may affect preoperative workup and clearance were not included in the assessment.

It is worthwhile to look into the cases, waiting consequences, and surgical outcomes of the patients enrolled on the hospital's waiting list. This will help achieve realistic targets for patients for elective surgery. Socioeconomic differences in health care access are also an important aspect to explore.

#### 5. Conclusion

Internal and external improvements should be undertaken to reduce the waiting time for elective gynecologic surgeries. At the hospital level,

strategies to decrease the waiting time may involve logistical analysis and changes in the physical setup, human resources, and process flows. Arrangements must be made to accommodate more patients for diagnostic tests earlier and coinciding with scheduled follow-ups. Increasing the operating room times and augmenting hospital staff are ideal. The optimum number of patients that can be accommodated in the clinics and operating rooms without compromising patient care should be identified. Lastly, a hospital committee and clinic for regular monitoring and evaluation of this queue should be established.

There are no current guidelines on safe and acceptable waiting times for specific gynecologic procedures. Guided by the study's findings, revised policies should be implemented once regular hospital operations resume after the current pandemic. Foremost should be the development of targets or benchmarks for safe and acceptable waiting times for elective surgeries. Referral systems to other hospitals capable of providing care for less specialized surgeries should be explored. Interventions should ultimately improve coordination between providers to enhance the quality of care and avoid unnecessary delays in health-care delivery.

### Ethical approval

This study was approved by the University of the Philippines Manila Research Ethics Board (UPMREB).

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### Author contribution

All authors were responsible for the conception and design of the study, and revisions and final approval of the paper.

### Registration of research studies

Research unique identifying number (UIN)  
Name of registry: Philippine Health Research Registry.  
Unique identifying number of registration ID: PHRR210416-003482.  
Hyperlink to the specific registration: [registry.healthresearch.ph](https://registry.healthresearch.ph).

### Guarantor

Glaiza S. de Guzman, MD and Maria Lilibeth L. Sia Su, MD.

### Consent

Waiver of informed consent was granted the UPM REB Panel since the research is a retrospective study on patients who underwent gynecologic surgeries. The research presents no more than minimal risk. In accordance with the National Ethical Guidelines of Health and Health-related Research 2017, mechanisms to ensure confidentiality were in place.

### Provenance and peer review

Not commissioned, externally peer reviewed

### Declaration of competing interest

All authors declared no conflicts of interest.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104403>.

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