# POGS 2019 report on obstetrical and gynecological indicators of healthcare

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**ABSTRACT**

**Background:** To address the need to improve the collation of vital statistical data from POGS-accredited institutions, the POGS Committee on Nationwide Statistics developed a new electronic census platform (now called the POGS Nationwide Statistics System or PNSS), that replaced the Integrated Statistical Information System (ISIS) which was started in 2008.

**Objectives:** The aims of this paper are the following: (1) to present initial data gathered through the PNSS and compare it to the Department of Health (DOH) census; (2) to discuss obstetrical and gynecological indicators of healthcare and (3) to assess the limitations of the PNSS and recommend improvements.

**Methodology:** This is a cross-sectional study that shall report obstetrical and gynecologic data generated from submissions of POGS-accredited hospitals from January to December 2019, through the PNSS. Charts and tables illustrating frequencies of the different health indices are presented. Health indices include crude livebirth rate, age-specific birth rate, adolescent birth rate, cesarean section rate, stillbirth rate, neonatal mortality rate, perinatal mortality rate, maternal mortality ratio, frequency of gynecologic admissions and procedures, and death secondary to gynecologic diseases.

**Results:** The number of accredited hospitals that submitted their census with 100% compliance was 135, thus 91.8% of accredited hospitals had full compliance. A total of 365,947 cases were reported, 89% (326,026) of cases were obstetric cases and the remaining 11% (39,921) were gynecologic cases. For obstetrical health indicators: the livebirth rate is highest in the NCR 36%, with the highest age-specific birth rates in the 20-29 age groups; adolescent birth rate is 7.3%, overall CS rate is 32.8%, stillbirth rate is 14.3 per 1000 neonates, neonatal mortality rate is 3.65 per 1000 livebirths, perinatal mortality rate is 18.35 per 1000 total births and maternal mortality ratio is 81.72 per 100,000 livebirths. The most frequent indications for gynecologic admissions are leiomyoma uteri, Abnormal Uterine Bleeding-Polyp (AUB-P) and Abnormal Uterine Bleeding-Myoma (AUB-M), while endometrial biopsy/diagnostic curettage is the most frequent gynecologic procedure performed; There were 150 deaths (0.38%) reported among gynecologic cases and majority (96%) had gynecologic malignancies, with ovarian cancer being the highest (41%).

**Conclusion:** Nationwide statistics serve as strong evidence on which policies are created. It provides vital information that serves as a basis for decision-making, planning and implementation of health programs and basic services and can also be used for monitoring and evaluation. It is recommended that preparations be undertaken for an improved 2021 version with enhancing the mechanism of encoding and transmitting data, improving data quality and developing more health indicators. Regular coordination with the accredited hospitals is encouraged for a more accurate data outcome and compliance performance. Collaboration in identifying areas for research should be fostered.

*Keywords: statistics, census, health indicators*

## INTRODUCTION

The Committee on Nationwide Statistics is a standing committee of the Philippine Obstetrical and Gynecological Society (POGS). It supervises the collation and annual publication of nationwide data in obstetrics and gynecology from accredited hospitals for training and for service.[1]

A system of electronically encoding compiled statistical data from these accredited institutions, called the Integrated Statistical Information System (ISIS) was started in 2008. To make the submission more user-friendly, it was later shifted to an EXCEL- type interface in 2012.

In 2016, the Committee looked into the trends in maternal mortality rates from 2012 to 2014[2]. Only 23.7% had complete data for all the 3 years. The MMR was 296 per 100,000 livebirths. A glaring limitation was the poor data collection. The low compliance in submitting complete forms was the basis for the Committee on Nationwide Statistics to strongly recommend an in-depth evaluation.

The following year, the Committee embarked on evaluating the factors affecting the use of ISIS across institutions. A nationwide evaluation[3] of the use of the present system was conducted. This included interviews with chairpersons, focused group discussions with residents and on-site observations on how data were encoded. The recommendation included harmonization of classification of disease with PHIC and ICD codes and inclusion of multiple diagnosis and co-morbidities. Enhancement of the use of the electronic data-based system was likewise recommended.

Thus in 2018, the Committee reviewed applications for new platforms. Upon approval by the Board of Trustees, the Committee started to work with LeapFroggr Inc to develop a nationwide-electronic census platform now called POGS Nationwide Statistics System (PNSS). This includes census application and a cloud portal to aggregate and generate reports. The present article will report on the collated data from this new electronic system.

## METHODOLOGY

All POGS accredited hospitals submitted their census to PNSS developed by Leapfroggr for POGS under the SeriousMD program. A workshop was held last year on how to use and access the new platform. In attendance were the Chairs, Training officers and designated encoders of these hospitals. The designated encoder was either a resident or a secretary. A step by step software installation process was provided as needed. A unique code was given to each hospital to access the platform. All data submitted was stored in a cloud portal and utilized a protected platform in accordance to the Data Privacy Act of 2012.

The number of accredited hospitals for Training and Service is 147. These includes 86 accredited hospitals for Training and 61 hospitals for Service. Reports were generated from the data from January to December 2019. The web portal for data entry for 2019 was closed last June 2020. Frequencies and measures of central tendency were used when possible.

Operational definitions:

- Age-specific birth rate = number of livebirths in a specific age group divided by the female population in that age group x 1000
- Adolescent Birth Rate = number of births to females age 15-19 years old per 1000 women
- Births by Cesarean Section = percentage of births by CS among all live births
- Stillbirth rate = number of stillborn neonates per 1000 neonates born (both live births and stillbirths)
- Neonatal Mortality Rate = number of neonatal deaths per 1000 livebirths
- Perinatal Mortality Rate = number of stillbirths plus neonatal deaths per 1000 total births
- Maternal Mortality Ratio = number of maternal deaths that result from the reproductive process per 100,000 livebirths

## RESULTS AND DISCUSSION

The number of accredited hospitals who submitted their census with 100% compliance was 135, thus 91.8% of accredited hospitals had full compliance. Figure 1 shows the accredited hospitals in the different regions. NCR has the greatest number of hospitals at 57 (39%), followed by Region 4, Calabarzon and MIMAROPA (9.5%), tied with Region 7 Central Visayas (9.5%) with 14 hospital each, and Region 3, Central Luzon, with 13 hospitals (8.8%) followed closely by Region 11 Davao, with 12 hospitals (8.2%).

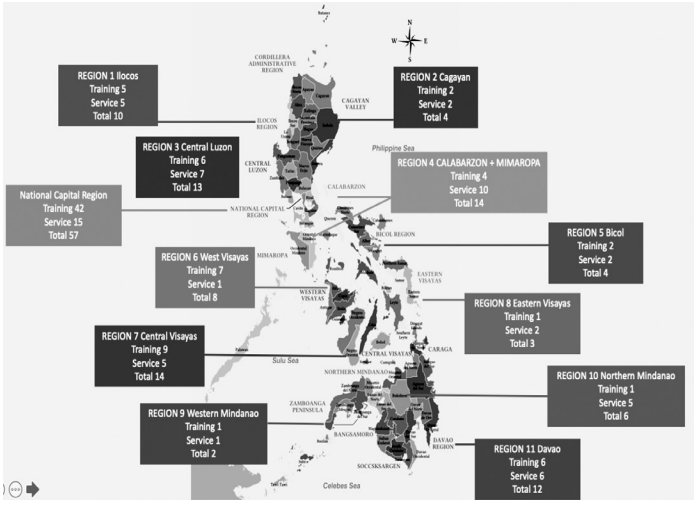



**Figure 1.** Distribution of POGS Accredited Hospitals in the Different Regions (Please see enhanced figure on page 48)

To place the POGS' census in perspective, it is important to consider national data. There are 2,373 healthcare institutions with recorded births and nearly half are lying in centers according to the Department of Health (DOH). POGS has 147 accredited hospitals and represents 6.2% of healthcare institutions with recorded births. If we are to limit this to secondary and tertiary hospitals with recorded births, the POGS' data is representative of only 32.3% of recorded births.

In 2019, there was a total of 365,947 cases reported, 89% (326,026) of cases were obstetric cases and the remaining 11% (39,921) were gynecologic cases.

The following graphs will compare the 2019 POGS census and the 2018 DOH Health Statistics.[4] The 2018 DOH Health Statistics is based on births obtained from the Certificates of Live Birth that were registered at the Office of the City/Municipal Civil Registrars and forwarded to the Philippine Statistics Authority (PSA). Information presented here includes registered births which occurred from January to December 2018. This is the latest available DOH Health Statistics.

## I. Obstetrical cases

### A. Livebirths

The DOH Health Statistics[4] registered 1,668,120 live births in 2018 which was equivalent to a crude birth rate (CBR) of 15.8 or about 16 livebirths per 1000 population[4]. About three babies were born alive per minute, which corresponded to a daily average of 4,570 livebirths.

In the POGS census, there were 275, 345 livebirths reported and it represents only 16.5% of all livebirths compared to the DOH Health Statistics. It is important to remember this point due to its implications on generalizability, and its potential utility for policy-making.

The distribution of livebirths per region is seen in Figure 2. The POGS' data shows the highest number of livebirths seen in NCR followed by Region 3 (Central Luzon) and Region 11 (Davao). This can be partly explained by the higher number of hospitals in these regions. Based on the DOH Health Statistics, the most number of livebirths is seen in NCR, Region 4 (Calabarzon), followed by Region 3 (Central Luzon).

The months with the highest number of livebirths based on the POGS data is January, October and September compared to the DOH Health Statistics which is September, October and November (Figure 3).

The percent distribution of livebirths based on the age group of the mother is seen in Figure 4. Both DOH Health Statistics and POGS 2019 data show the highest percentage of livebirths in the 20-29 age group. This result is expected since women have highest fecundability at this age range.

The age-specific birth rate is computed by the number of livebirths in a specific age group divided by the female

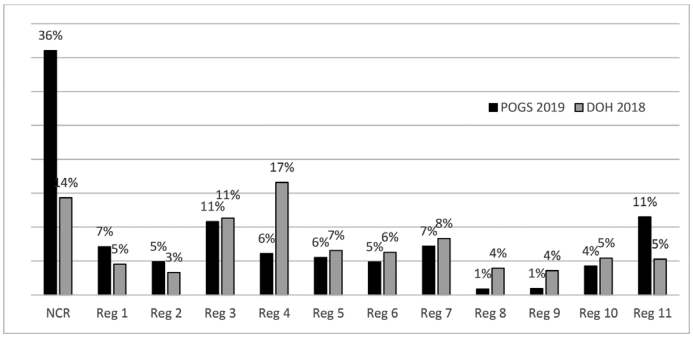



**Figure 2.** Distribution of Livebirths in Percentage per Region comparing 2018 DOH Health Statistics and 2019 POGS Data

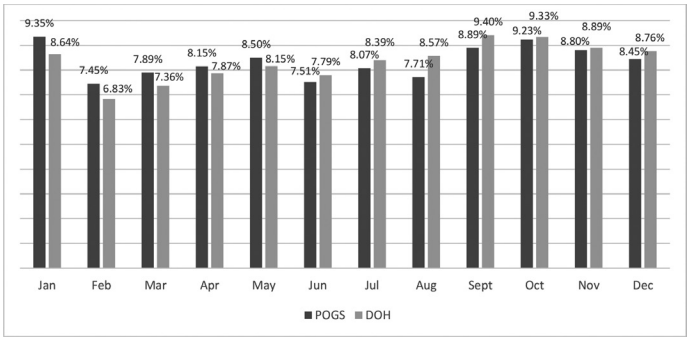



**Figure 3.** Distribution of Livebirths in Percentage per Month comparing 2018 DOH Health Statistics and 2019 POGS Data

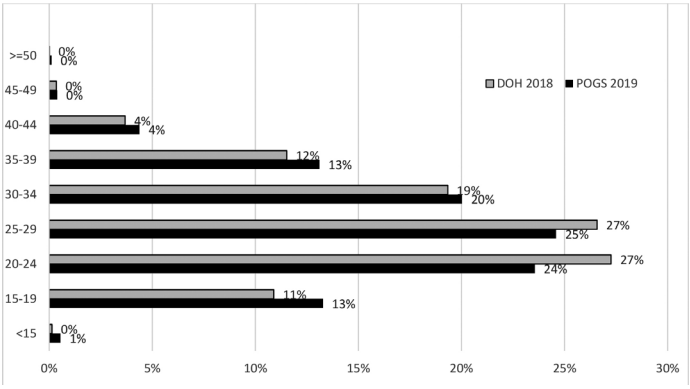



**Figure 4.** Percent Distribution of Livebirths By Age Group of Mother comparing 2018 DOH Health Statistics and 2019 POGS Data

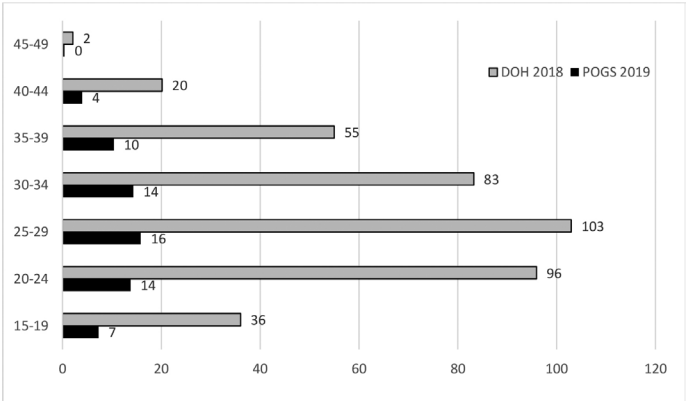



**Figure 5.** Age-specific birth rate comparing 2018 DOH Health Statistics and 2019 POGS Data

population in that age group x 1000 (Figure 5). The age-specific birth rates are highest in the 20-29 age groups.

The **Adolescent Birth Rate** is computed by the number of births to females age 15-19 years old per 1000 women. The World Health Organization (WHO)[5] reported the Global rate at 42.5 per 1000 women. Based on the DOH Health Statistics, it is 36.03 per 1000 women. In the present POGS census, there were 36803 livebirths in the 15-19 year age range and divided by the national population of 5043110 in that age group, the Adolescent Birth Rate is 7.30 per 1000 women. The percentage of women who gave birth within this age group is 13.28%.

In terms of percentage per age of gestation, 74% were term at delivery (37-41 weeks AOG). Nearly eleven percent was less than or equal to 20 weeks and 1% at 42 weeks or more. A summary is seen in Table 1 below.

**Table 1.** Percentage of Obstetric Cases by Age of Gestation

| AOG | % |
|---|---|
| < 20 weeks | 10.25 |
| < 33 weeks (early preterm) | 4.95 |
| < 37 weeks (late preterm) | 9.35 |
| 37-41 weeks (term) | 74.26 |
| >= 42 (post term) | 1.19 |

Preterm births comprise 14.3% of the total obstetric cases for 2019. This number underscores the unmet need for cost-effective preventive or treatment interventions for preterm birth. Preterm babies, especially the severely premature ones, present a huge economic burden, not only to the families and caregivers of the preterm infant, but also to the health sector.

**B. Cesarean section rates**

Cesarean sections as a percent of all births reflects the accessibility and utilization of services. The WHO places the cesarean section rate between 5-15%. Rates below 5% may indicate inadequate availability and/or access to emergency obstetric care while rates above 15 % suggest overuse of the procedure for non-emergency reasons. The births by cesarean section is computed by the percentage of births by CS among all live births.

The POGS 2019 census showed that there was a total of 90,491 cesarean sections done with an overall CS rate of 32.86%. The births by cesarean section per region is seen in Figure 6. Regions 1 and 11 tallied the highest CS rates (37%), followed by Regions 6 and 8 (36%) and Region 2 (34%). Region 9 registered the lowest CS rate at 25%. NCR, which has the most hospitals included and the highest number of livebirths, unexpectedly comes only at 5th place in CS rates. Most cesarean sections were primary with an average percentage of 64.87% (Figure 7).

The indications for cesarean section was reported by 48,232 (53.3%) of cases. The most common indication was fetal distress diagnosed either by auscultation or fetal tocomonitor (33%), followed by dysfunctional labor(27%) and malpresentation (25%). Previous CS was only reported in 2% of cases (Figure 9). As indicated earlier, Regions

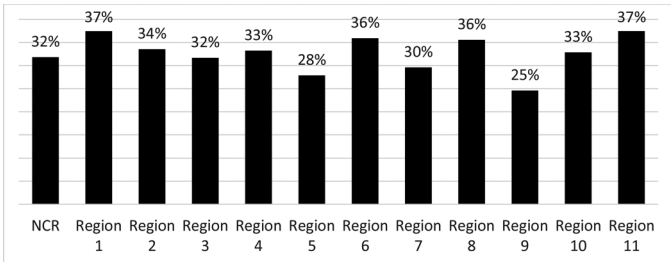



**Figure 6.** Births by Cesarean section per Region

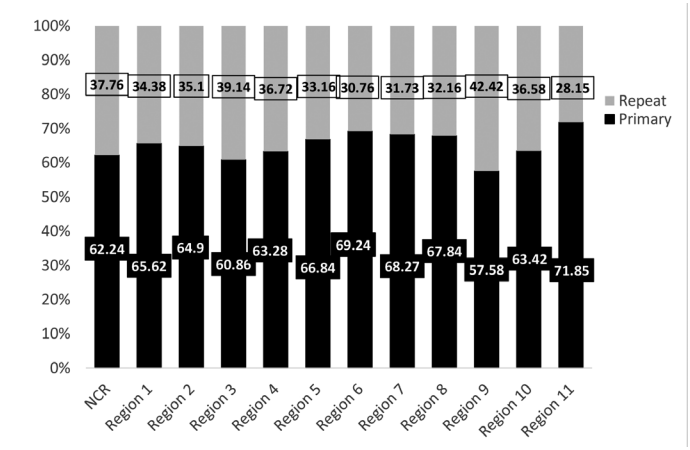



**Figure 7.** Percent of Births by Primary and Repeat Cesarean Section per Region

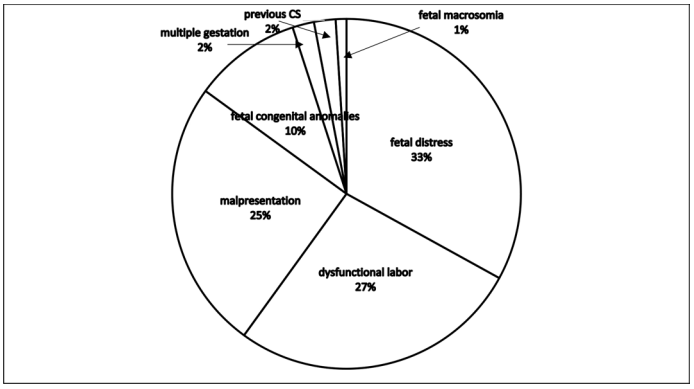



**Figure 8.** Indications for cesarean section

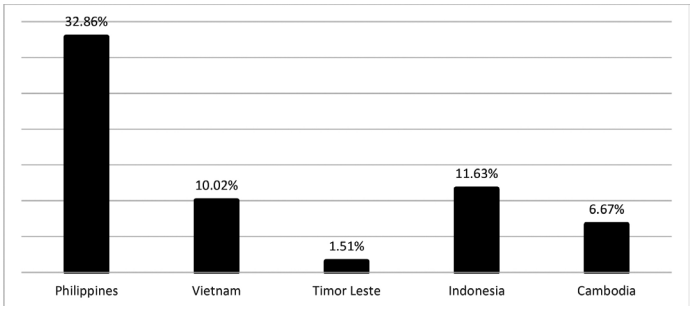



**Figure 9.** Comparison of CS rates in selected Southeast Asian countries[7]

1 and 11 reported the highest CS rates nationwide. Dysfunctional labor was the most common indication for CS for Region 1, and fetal distress for Region 11.

These CS rates are above the 15% cut off set by the WHO. The authors noted that a considerable proportion for CS indications were due to fetal distress detected by auscultation. This may mean that many of these hospitals lack fetal tocomonitors, that are crucial in proper fetal monitoring and timely intervention during labor. Lack of this vital equipment may possibly have profound effects in neonatal and perinatal outcomes (e.g, morbidity and mortality rates). The authors also suggest future investigations on the predominant patterns of dysfunctional labor reported, to possibly identify areas for improvement, and create local guidelines and recommendations to help stem the high nationwide CS rates. Figure 9 below shows how our nationwide CS rate compares with other neighboring countries in the Southeast Asian region.

**C. Measures of Obstetrical Care**

The following vital statistics are considered measures of obstetrical care:

- Stillbirth Rate
- Neonatal mortality rate
- Perinatal mortality rate
- Maternal mortality ratio

The Stillbirth Rate is the number of stillborn neonates per 1000 neonates born (this includes both live births and stillbirths). There were 4117 reported stillbirths with an overall stillbirth rate of 14.73 per 1000 neonates born and this is calculated per region as seen in Figure 10. Region 9 reported the highest stillbirth rate at 24.10%, followed closely by Region 5 (22.57%) and Region 10 (22.23%). Region 2 tallied the lowest number of stillbirths.

In 2015, there were 2.6 million stillbirths globally and majority of these deaths occurred in developing countries such as the Philippines (98% in low and middle-income countries). About 50% of these stillbirth cases occurred during labor, and it is suggested that it may be prevented if hospitals were better equipped or health care providers provided better and timely intrapartum care.[8]

The Neonatal Mortality Rate is the number of neonatal deaths per 1000 livebirths. There were 1012 neonatal deaths with an overall neonatal mortality rate of 3.68 per 1000 livebirths. Region 6 reported the highest neonatal mortality rate at 7.85 per 1000 livebirths, followed by Region 9 (6.66 per 1000 livebirths) and Region 10 (6.41 per 1000 livebirths). There were no reported neonatal deaths in Region 8 (Figure 11).

For comparison, the reported neonatal mortality rate for Southeast Asian region is 13 per 1000 livebirths.[9]

The Perinatal Mortality Rate is the number of stillbirths plus neonatal deaths per 1000 total births. There were 5129 perinatal deaths with an overall perinatal mortality rate of 18.35 per 1000 total births (Figure 12). Region 9 registered the highest perinatal mortality rate at 30.6 per 1000 total births, while Region 4 has the lowest perinatal mortality rate at 13.82 per 1000 total births.

The Maternal Mortality Ratio is the number of maternal deaths that result from the reproductive process per 100,000 livebirths. It is a measure of obstetric risk. It is a broad indication of the level of maternal mortality, rather than a precise measure, because of the limitations inherent in most measurement methods.[10] The 2018 DOH Health Statistics[4] reports a total of 1616 maternal deaths with a 100.31 per 100,000 livebirths Maternal Mortality Ratio. Based on our statistics, there were 225 reported deaths with a MMR of 81.72 per 100,000 livebirths. The following figure (Figure 13) shows the MMR across the different regions.

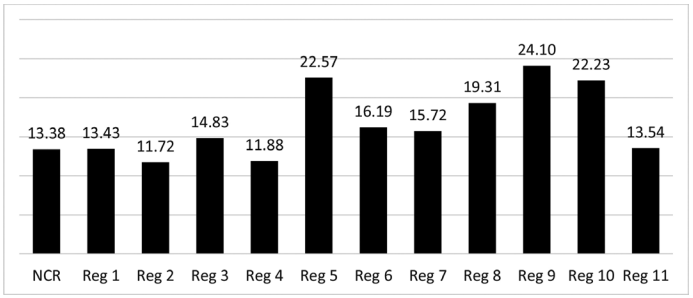



**Figure 10.** Stillbirth rate per 1000 neonates born per region

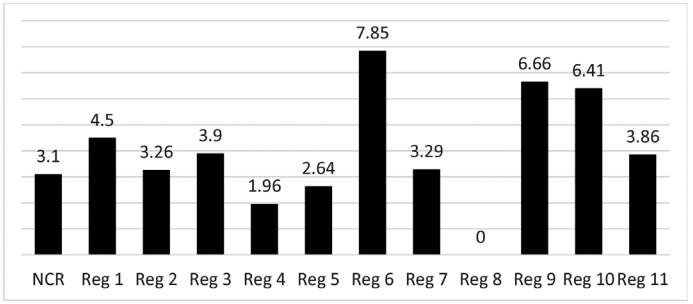



**Figure 11.** Neonatal mortality rate per 1000 livebirths per Region

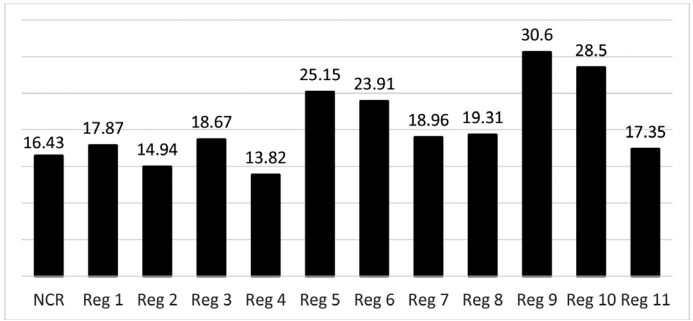
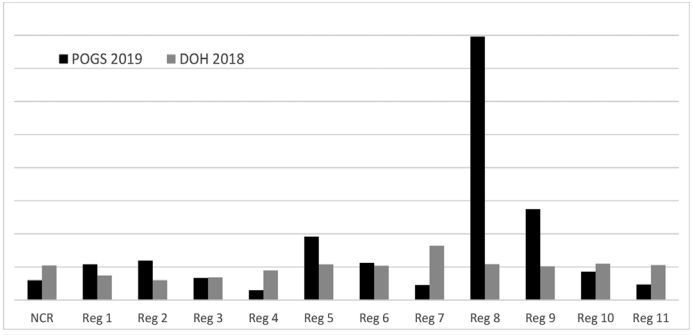



**Figure 12.** Perinatal mortality rate per 1000 Total Births per Region




| | NCR | Reg 1 | Reg 2 | Reg 3 | Reg 4 | Reg 5 | Reg 6 | Reg 7 | Reg 8 | Reg 9 | Reg 10 | Reg 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POGS | 59.48 | 107.47 | 118.57 | 67.21 | 29.76 | 191.32 | 112.17 | 45.50 | 795.98 | 274.40 | 85.48 | 47.44 |
| DOH | 104.99 | 73.98 | 60.01 | 68.78 | 89.65 | 107.48 | 103.97 | 164.57 | 107.87 | 102.05 | 109.71 | 105.88 |

**Figure 13.** Maternal Mortality Ratio per 100,000 livebirths in the Different Regions

**Table 2:** Summary of Maternal Core Indicators (POGS 2019)

| | |
|---|---|
| Total Live Births | 84.4% |
| % of women who gave birth (15-19 years old) | 13.28% |
| Preterm Births | 14.3% |
| % CS among livebirths<br>Primary<br>Repeat | 32.86%<br>64.87%<br>35.13% |
| Overall Stillbirth rate per 1000 neonates born | 14.73 |
| Neonatal Mortality Rate per 1000 livebirths | 3.68 |
| Perinatal mortality rate per 1000 total births | 18.35 |
| Maternal Mortality Ratio per 100,000 livebirths | 81.72 |

Based on the DOH Health Statistics[4], the Central Visayas, Region 7, recorded the highest MMR of 164 maternal deaths per one hundred thousand live births. While Region 2, Cagayan, had the lowest with 60 deaths per one hundred thousand live births. Eight (8) out of 17 regions had MMR higher than the national rate of 100, including the Central Visayas.

For POGS, our data show a lower overall MMR of 81.72 per 100,000 live births. However there were 6 regions that had a higher MMR than that of POGS with Region 8 (Eastern Visayas) tallying the highest number of maternal deaths (19 deaths).

The WHO[11] reported the estimated MMR for the Southeast Asian region to be at 137. Reported MMR from both DOH and POGS statistics are below this mark.

For the causes of death, "others", which was not further specified in the PNSS platform, was the highest (38.1%). This was followed by hypertension (27.5%) and then hemorrhage (25%). In the DOH Health Statistics4, eclampsia was the leading cause of maternal death with 284 deaths (17.6%). This was followed by gestational hypertension with significant proteinuria with 198 deaths and was 12.3 percent of the total maternal deaths.

The WHO reports that worldwide, most cases of maternal mortality are due to complications that develop during pregnancy and most are preventable or treatable. Other complications may have existed before pregnancy but became worse during pregnancy, especially with poor prenatal care. The major causes of maternal mortality that account for nearly 75% of all maternal deaths are postpartum hemorrhage, maternal infections, hypertension, and complications from delivery. Other causes are related to chronic conditions like cardiac diseases or diabetes.[12]

A Summary of Maternal Core Indicators is seen below (Table 2).

**II. Gynecologic Cases**

There was a total of 39,921 cases (11%) reported. Majority were from NCR (44%), followed by Region 7 (11.1%) and Region 11 (8.4%). Leiomyoma (24%), Abnormal Uterine Bleeding-Polyp (AUB-P) (22%), and Abnormal Uterine Bleeding-Malignancy (AUB-M) (12.87%) were the top gynecologic diagnosis.

A total of 7495 malignancies were reported. The most common was ovarian cancer (39%), followed by cervical cancer (31%) and then cancer of the corpus (22%) ( Figure 15).

A total of 23,694 procedures were performed and this is broken down as follows (Figure 16).

Endometrial biopsy/diagnostic curettage is the top gynecologic procedure performed. Blood transfusion and medical management are in the top 5 of the list as AUB-P, AUB-M and AUB-Endometrial (AUB-E) were three of the top indications for gynecologic admissions. Hysterectomy comprises only 8% of the total gynecologic procedures, despite leiomyoma being the most frequent diagnosis among admitted gynecologic patients.

There were 150 deaths (0.38%) collated from gynecologic cases (Figure 17). Most of the mortalities (96%) were seen among gynecologic malignancies, the highest among cases with ovarian cancer (41%).

## CONCLUSION

The number of accredited hospitals that submitted their census was 135, with 91.8% compliance. A total of 365,947 cases were reported, 89% were obstetric cases and the remaining 11% were gynecologic cases. For obstetrical health indicators: the livebirth rate is highest in the NCR at 36%; the highest age-specific birth rates is seen in the 20-29 age groups; adolescent birth rate is 7.3%, overall CS rate is 32.8%, stillbirth rate is 14.3 per 1000 neonates, neonatal mortality rate is 3.65 per 1000 livebirths, perinatal mortality rate is 18.35 per 1000 total

births and maternal mortality ratio is 81.72 per 100,000 livebirths. The most frequent indication for gynecologic admissions is leiomyoma uteri while endometrial biopsy/ diagnostic curettage is the most frequent gynecologic procedure performed. There were 150 deaths (0.38%) tallied from gynecologic cases and majority (96%) were among gynecologic malignancies, with ovarian cancer being the highest (41%).

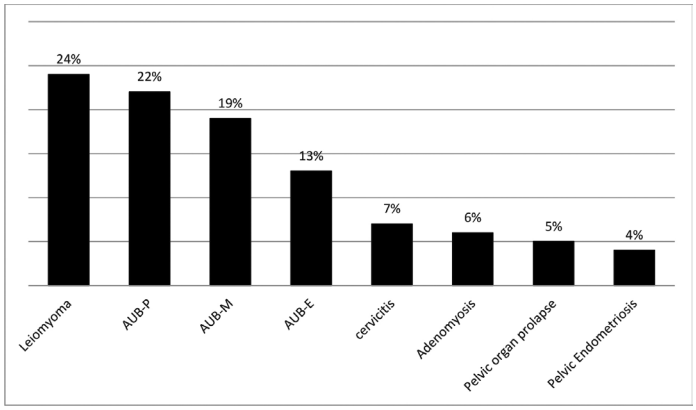



**Figure 14.** Most common gynecologic diagnosis

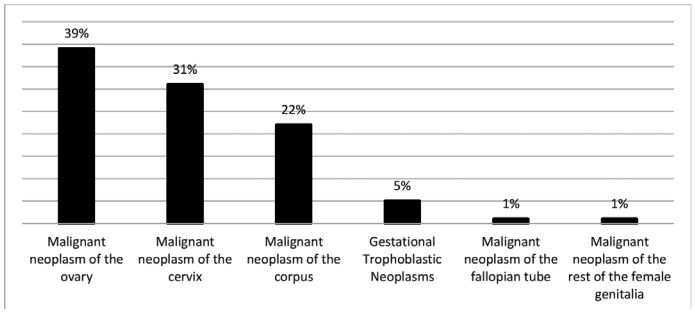



**Figure 15.** Malignant diseases of the genital tract

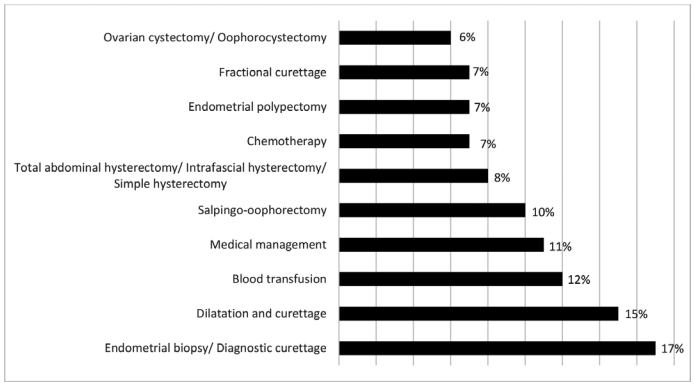



**Figure 16.** Frequency of Procedures

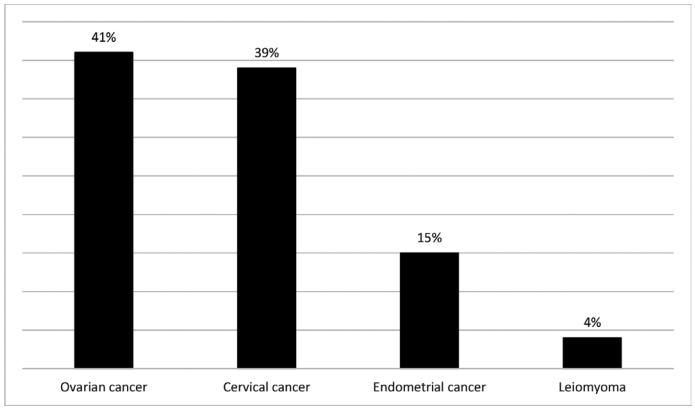



**Figure 17.** Causes of gynecologic mortality

Nationwide statistics serve as strong evidence on which policies are created. It provides vital information that serves as a basis for decision-making, planning and implementation of health programs and basic services, and can also be used for monitoring and evaluation. Timely and accurate statistics will help us define the areas we need to improve on, as well as the unmet needs of our patients. Having our own systematic local data will also help benchmark our efforts and outcomes against those of our neighboring countries, and see how advanced, at par or behind we are compared to our international counterparts.

## LIMITATIONS

The POGS Nationwide statistics includes only hospitals accredited by POGS. It is possible that there is inaccurate or incomplete submission of data. There is also note of a lack of standardization of terms and procedures and overlapping of procedures.

## RECOMMENDATIONS FOR FUTURE ACTIVITIES

It is recommended that additional maternity indicators be included such as the number of antenatal visits (at least 4 visits), Vaginal Birth After Cesarean (VBAC) rate , causes of direct and indirect maternal deaths and provisions of postpartum family planning services.

Preparations should likewise be undertaken for an improved 2021 version with the following: enhance mechanism of encoding and transmitting data, improve data quality and develop more health indicators.

Improvement in data collection can be undertaken by conducting reviews with the Committee on Hospital Accreditation for Service (CHAS) and the Philippine Board of Obstetrics and Gynecology (PBOG) to check on submitted data that need to be verified and to ensure more accurate reporting of data in the future. Collaboration in identifying areas for research should be fostered.

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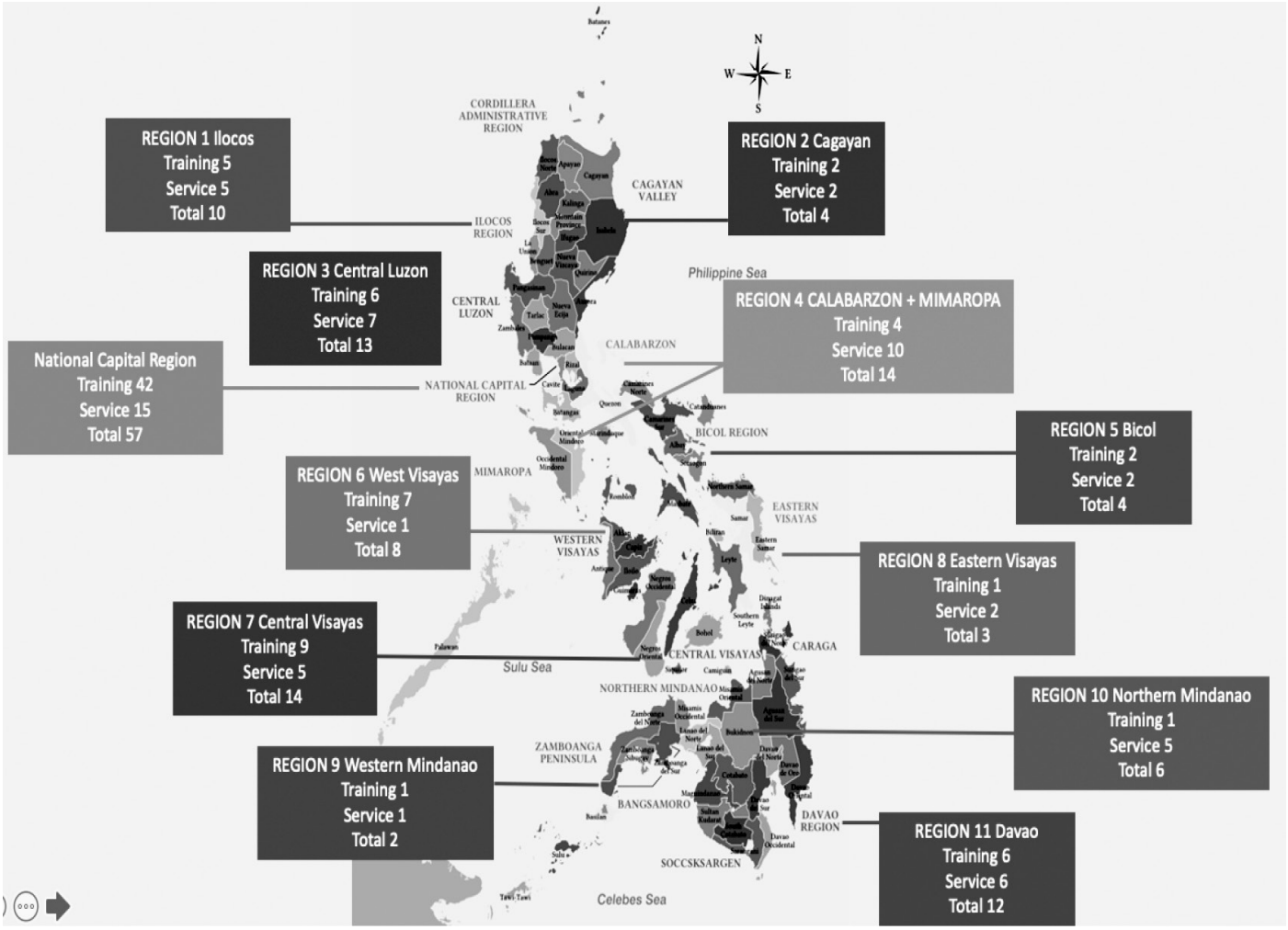


Distribution of POGS Accredited Hospitals in the Different Regions