THESIS

RISK FACTORS OF FETAL OUTCOME IN PREGNANT WOMEN WITH CANCER IN EAST JAVA INDONESIA: EPIDEMIOLOGICAL STUDY.

BY :
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Submitted as one of the requirements to obtain The
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Department of Maternal and Child Health studies
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PREFACE

First and foremost, I praise Allah, the Almighty God for His Grace which has enabled the preparation of this thesis titled "**Risk Factors of Fetal Outcome in Pregnant Women with Cancer in East Java Indonesia: Epidemiological Study**" until completion. This thesis discusses the relationship of certain factors such as type of cancer, stage of cancer, Maternal age, Gestational age, Maternal outcome, and the fetal outcome for pregnant women who diagnoses with Cancer in Dr. Seotomo hospital. The results of these findings are expected to help future researchers, government, and health workers, and be a reference in further health studies.

The author conveys sincere gratitude to Dr. M. Atoillah Isfandiari, dr., M. Kes and Dr. Ernawati, dr., Sp. OG(K)., who were the main supervisor and second supervisor respectively, with patience and keen attention provided support, guidance, encouragement, and suggestions for the improvement of this thesis.

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May Allah SWT reward you for all the deeds that have been given and hopefully this thesis will be useful both for ourselves and for other parties who use it.

The author also accepts all criticism and suggestions from all parties for the sake of the perfection of this thesis. Hopefully, this thesis can provide benefits to anyone who uses it.

Surabaya, 25 August 2022

Nardeen Adel

SUMMARY

RISK FACTORS OF FETAL OUTCOME IN PREGNANT WOMEN WITH CANCER IN EAST JAVA INDONESIA: EPIDEMIOLOGICAL STUDY.

Pregnant women having cancer is a rare event, occurring approximately once per 1,000 pregnancies annually, corresponding to 0.07% to 0.1% of all malignant tumors. Despite its rarity, its incidence nowadays keeps on increasing worldwide. The maternal health condition during pregnancy has a great impact on the fetal or newborn baby outcome. Limited data are available regarding cancer during pregnancy and its maternal and fetal outcomes in Indonesia. Therefore, this study aims to describe the available data on pregnant women with cancer in East Java- Indonesia, maternal outcomes and fetal outcomes, and knowing the risk factors of bad fetal outcomes in pregnant women with cancer from an epidemiological point of view.

This is a quantitative observational study of pregnant women with cancer in East Java Indonesia. Its design is a Cross-sectional study. This research was conducted in Dr. Soetomo Hospital, as it is one of the most important referral hospitals in East Java (from 37 districts), which is located in Surabaya (the capital city of east Java), from the period between May to August 2022. The study population was all pregnant women with cancer in East Java, from 2016 to 2020. The study sample was all pregnant women with cancer who were delivered or consulted in the Obgyn department at Dr. Seotomo Hospital from 2016 to 2020. Excluding criteria were the loss of follow-up cases, the cases of cancer history before pregnancy, and the incomplete medical report. The sample size was the total number of samplings found in the hospital for 5 years. The data of these cases were extracted from the hospital medical reports (Obgyn department). Data collection on the cases of pregnant women with cancer was obtained from secondary data (the medical report in the Obgyn department at Dr. Setomo Hospital from 2016 – 2020). Data processing was done by entry and categorized. During data entry, study variables were retrieved from CRF (Case Report Form) and entered into Microsoft Excel, categorized then transformed into SPSS version 25 for statistical analysis.

The results show, from reading the medical reports from 2016 - 2020, 54 cases of pregnant women with cancer had been extracted. The incident rate decreased from (24%) in 2016 to (18 %) in 2017, then ascended again in 2018 and 2019 to (19%) and (24%), and finally decreased again in 2020 to (15%). Generally, the incident rate of Non-Obgyn Cancer (55.6%) is higher than Obgyn Cancer (44.4%). Stages of cancer could be categorized as suspected, begging stage I/II, and advanced stage III/IV. The result shows 15 cases (26.7%) Advanced stage, 8 cases (14%) begging stage, 12 cases (21.4%) suspect, and 19 cases (33.9 %) not mentioning the stage. Of the total 54 cases, fifteen cases have advanced age above 35 Years old (27.7%). While 32 cases (59.3 %) have ages between 24 – 35 years old, and 7 cases (13%) have ages below 24 years old. Of 54 cases there are 5 cases (9.2%) in the 1st trimester (1-13 weeks), 9 cases (16.6%) in the 2nd trimester (14 -26 weeks), and 40 cases (74%) in the 3rd trimester (27-40 weeks). Out of 54 cases of pregnant women with cancer, 8 cases (14.8%) died during or after her delivery. Out of 54 cases of pregnant women with cancer, 17 (31.4%) cases had fetal Mortality, and 37 cases (68.5%) had fetal survival. Out of 37 fetal survival cases, the fetal outcome of weight was 18 cases ≥ 2450g (48.6 %), and 19 cases < 2450g (51.3%). On the other hand, fetal height had 20 cases (18.7%) ≥ normal average height (46 cm), and 17 cases (15.9%) < 46 cm. As for APGAR Score (Appearance, Pulse, Grimace+ Activity+

Respiration) could be divided into three categories Low (4 cases = 3.7 %), Middle (9 cases = 8.4%), and Normal (24 cases = 22.4 %). The result shows there is no relationship between cancer type, cancer stage, maternal age, maternal outcome, and fetal outcome. On the other hand, there is a relationship between gestational age and fetal outcomes.

The author recommended further research about other risk factors is recommended to be done. Especially, research made on the relationship between cancer treatment and fetal outcomes. Also, the researcher recommends researching the risk factors of late cancer diagnoses during pregnancy besides the similarity of the symptoms between cancer and pregnancy. It could be social-environmental factors. The researcher recommends increasing the awareness campaigns related to the importance of ANC to early diagnoses for critical deceases like cancer, awareness campaigns related to the risk factors of cancer, and how to avoid it in daily life. In addition, increasing the awareness campaigns in secondary schools for the students and their parents related to the risk factors of premature marriage/ adolescents marriage before 24 years old, one of them is Cancer. Also, the researcher recommends giving medical training to midwives to recognize the signs of cancer in women generally, especially in remote areas that are difficult to come regularly to the medical centers.

RINGKASAN

FAKTOR RISIKO HASIL JANIN PADA IBU HAMIL DENGAN KONDISI KANKER DI JAWA TIMUR INDONESIA: STUDI EPIDEMIOLOGI.

Wanita hamil yang menderita kanker merupakan kejadian langka yang terjadi pada satu banding 1.000 kehamilan setiap tahun, setara dengan 0,07% hingga 0,1% dari semua tumor ganas. Meskipun jarang, kejadiannya saat ini terus meningkat di seluruh dunia. Kondisi kesehatan ibu selama kehamilan memiliki dampak besar pada hasil janin atau bayi baru lahir. Tidak banyak data tersedia mengenai kanker selama kehamilan dan kondisi yang dialami ibu pasca kelahiran dan janin di Indonesia, oleh karena itu, penelitian ini bertujuan untuk menjelaskan data yang tersedia mengenai ibu hamil penderita kanker di Jawa Timur-Indonesia, kondisi yang dialami ibu pasca kelahiran dan hasil janin, serta mengetahui faktor risiko dari janin yang buruk yang terjadi pada ibu hamil dengan kanker dari sudut pandang epidemiologi.

Ini merupakan studi kuantitatif dengan teknik observasi pada ibu hamil penderita kanker di Jawa Timur Indonesia, dengan konsep studi potong-lintang. Penelitian ini dilakukan di Rumah Sakit Dr. Soetomo, sebagai salah satu rumah sakit rujukan utama di Jawa Timur (dari 37 kabupaten), yang terletak di Surabaya (Ibukota Jawa Timur), dari periode Mei hingga Agustus 2022. Populasi penelitian ini adalah seluruh ibu hamil penderita kanker di Jawa Timur tahun 2016 sampai dengan tahun 2020. Sampel penelitian ini adalah seluruh ibu hamil penderita kanker yang melakukan persalinan atau berkonsultasi di bagian Obgyn RS Dr. Seotomo tahun 2016 sampai tahun 2020. Kriteria eksklusi pada penelitian ini adalah hilangnya kasus yang tindak berlanjut, kasus riwayat kanker sebelum kehamilan, dan laporan medis yang tidak lengkap. Ukuran sampel yang digunakan adalah jumlah sampel yang ditemukan di rumah sakit selama 5 tahun. Data untuk kasus-kasus ini didapatkan dari laporan medis rumah sakit (Departemen Obgyn). Pengumpulan data pada kasus ibu hamil dengan kanker diperoleh dari data sekunder (laporan medis di bagian Obgyn RS Dr. Setomo tahun 2016 – 2020). Pengolahan data dilakukan dengan cara menginput dan mengkategorikan data. Selama memasukan data, variabel penelitian didapatkan dari CRF (Case Report Form) dan dimasukkan ke dalam Microsoft Excel, dikategorikan dan kemudian diubah menjadi SPSS versi 25 untuk analisis statistik.

Hasil penelitian menunjukkan, dari pembacaan laporan medis dari 2016-2020, 54 kasus ibu hamil dengan kanker telah diekstraksi. Angka kejadian menurun dari (24%) pada tahun 2016 menjadi (18%) pada tahun 2017, kemudian naik lagi pada tahun 2018 dan 2019 menjadi (19%) dan (24%), dan akhirnya menurun lagi pada tahun 2020 menjadi (15%). Secara umum, angka kejadian Kanker Non-Obgyn (55,6%) lebih tinggi dibandingkan kanker Obgyn (44,4%). Stadium kanker dapat dikategorikan menjadi suspek, stadium awal I/II, dan stadium lanjut III/IV. Hasil penelitian menunjukkan 15 kasus (26,7%) stadium lanjut, 8 kasus (14%) stadium awal, 12 kasus (21,4%) suspek atau dicurigai, dan 19 kasus (33,9%) tidak menyebutkan stadium. Dari total 54 kasus, lima belas kasus memiliki usia lanjut di atas 35 Tahun (27,7%). Sedangkan 32 kasus (59,3%) berusia antara 24 – 35 tahun, dan 7 kasus (13%) berusia di bawah 24 tahun (Gbr. 3). Dari 54 kasus terdapat 5 kasus (9,2%) pada trimester 1 (1-13 minggu), 9 kasus (16,6%) pada trimester 2 (14 -26 minggu), dan 40 kasus (74%) pada trimester 3 (27-40 minggu). Dari 54 kasus ibu hamil dengan kanker, 8 kasus (14,8%) meninggal selama atau setelah melahirkan, 17 kasus (31,4%) memiliki kematian janin, dan 37 kasus (68,5%) memiliki

kelangsungan hidup janin. Dari 37 kasus janin dengan kelangsungan hidup, hasil berat badan janin adalah 18 kasus 2450g (48,6 %), dan 19 kasus <2450g (51,3%). Sedangkan tinggi janin adalah, 20 kasus (18,7%) dengan tinggi rata-rata normal (46 cm), dan 17 kasus (15,9%) < 46 cm. Adapun Skor APGAR (Appearance, Pulse, Grimace+ Activity+ Respiration) dapat dibagi menjadi tiga kategori, Rendah (4 kasus = 3,7%), Sedang (9 kasus = 8,4%), dan Normal (24 kasus = 22,4%). Hasil penelitian menunjukkan tidak ada hubungan antara jenis kanker, stadium kanker, usia ibu saat akan melahirkan, kondisi yang dialami ibu pasca kelahiran, dan hasil janin. Namun di sisi lain, ada hubungan antara usia kehamilan dan hasil janin.

Penulis merekomendasikan penelitian lebih lanjut untuk dilakukan tentang faktor risiko lain dianjurkan untuk dilakukan. Terutama, penelitian yang dibuat tentang hubungan antara pengobatan kanker dan hasil janin. Selain itu, peneliti merekomendasikan untuk meneliti faktor risiko keterlambatan diagnosis kanker selama kehamilan selain kesamaan gejala antara kanker dan kehamilan. Bisa jadi faktor lingkungan sosial. Peneliti merekomendasikan peningkatan kampanye mengenai kesadaran terkait pentingnya ANC untuk diagnosis dini penyakit kritis seperti kanker, kampanye kesadaran terkait faktor risiko kanker, dan cara menghindarinya dalam kehidupan sehari-hari. Sebagai tambahan, meningkatkan sosialisasi di sekolah menengah kepada siswa dan orang tua terkait faktor risiko pernikahan dini/pernikahan remaja sebelum usia 24 tahun, salah satunya Kanker. Selain itu, peneliti merekomendasikan untuk memberikan pelatihan medis kepada bidan untuk mengenali tanda-tanda kanker pada wanita secara umum, terutama di daerah terpencil yang tidak mudah untuk datang secara teratur ke pusat kesehatan.

ABSTRACT

Introduction: Cancer during pregnancy is a rare event, despite its rarity, its incidence nowadays keeps on increasing worldwide. ***Objective***: This study aims to describe the available data on pregnant women with cancer in East Java- Indonesia, maternal outcomes and fetal outcomes, and knowing the risk factors of bad fetal outcomes in pregnant women with cancer from an epidemiological point of view.

Method: This is a quantitative observational study of pregnant women with cancer in East Java Indonesia. Its design is a Cross-sectional study. Data collection was obtained from secondary data (the medical report in the Obgyn department at Dr. Seotomo Hospital from 2016 – 2020). Data were analyzed statistically by using SPSS program version 25.

Result: The results showed that from 2016 to 2020, 54 cases of pregnant women with cancer had been extracted with an incident rate 0.8%. The incident rate of Non-Obgyn Cancer (55.6%) is higher than Obgyn Cancer (44.4%). The highest incident rates in Non-Obgyn Cancer are Breast cancer (7.5%) and Leukemia (3.7%), while the highest incident rates in Obgyn Cancer are Cervical and Ovarian (8.4%). There is no relationship between cancer type, maternal age, and maternal outcome with fetal outcomes, while there is a relationship between cancer stage and gestational age with fetal outcomes.

Conclusion: Gestational age and cancer stage could be risk factors for fetal outcome in Indonesian pregnant women with cancer.

Keywords: Cancer, pregnancy, Maternal outcome, Fetal outcome, Epidemiology.

ABSTRAK

Pendahuluan: Kanker selama Kehamilan merupakan kejadian langka meskipun jarang, kejadiannya saat ini terus meningkat di seluruh dunia. ***Tujuan:*** Penelitian ini bertujuan untuk menjelaskan data yang tersedia mengenai ibu hamil penderita kanker di Jawa Timur-Indonesia, kondisi yang dialami ibu pasca kelahiran dan hasil janin, serta mengetahui faktor risiko dari janin yang buruk yang terjadi pada ibu hamil dengan kanker dari sudut pandang epidemiologi.

Metode: Penelitian ini merupakan studi kuantitatif observasi dengan Cross-sectional desin. Pengumpulan data pada kasus ibu hamil dengan kanker diperoleh dari data sekunder (laporan medis di bagian Obgyn RS Dr. Setomo tahun 2016 – 2020). Peneliti mengunakan SPSS versi 25 untuk analisis statistik.

Hasil: Hasil penelitian menunjukkan, Hasil penelitian menunjukkan bahwa dari tahun 2016 hingga tahun 2020 telah dilakukan ekstraksi 54 kasus ibu hamil penderita kanker dengan angka kejadian 0,8%. Angka kejadian Kanker *Non-Obgyn* (55,6%) lebih tinggi dibandingkan kanker *Obgyn* (44,4%). Angka kejadian tertinggi pada Kanker Non-Obgyn adalah Kanker Payudara (7,5%) dan Leukemia (3,7%), sedangkan angka kejadian tertinggi pada Kanker Obgyn adalah Kanker Serviks dan Ovarium (8,4%). Tidak ada hubungan antara jenis kanker, usia ibu saat akan melahirkan, kondisi yang dialami ibu saat persalinan, dan hasil janin. Sedangkan, ada hubungan antara stadium kankar dan hasil janin (berat badan), ada juga hubungan antara usia kehamilan dan hasil janin

Kesimpulan: Usia kehamilan dan stadium kanker dapat menjadi faktor risiko hasil janin pada ibu hamil dengan kanker di Indonesia.

Kata Kunci: Kanker, Ibu Hamil, Hasil ibu, Hasil janin, Epidemiologi.

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List of the meaning of symbols

&	= and
≥	= more than and similar to
≤	= less than and similar to
%	= present
$	= dollar
/	= per
cd	= candela
IU	= international unit

List of Abbreviations

r	= correlation coefficient
df	= degree of freedom
SEM	= standard error of the mean
ATP	= adenosine 5'-triphosphate (adenosine triphosphate)
EDT	= ethylene diamine triacetate
EEG	= electroencephalogram
log	= logarithm (to base 10)

List of Terms

cf.	= compare
e.g.	= for example
etc.	= and so forth
i.e.	= that is
viz.	= namely
vs	= versus, against
Ca	= Cancer
PTB	= Preterm Birth
LBW	= Low Birth Weight
SGA	= Small Gestational Age