

THESIS

THE CORRELATION OF LOW DOSE AND LONG TERM CORTICOSTEROID
THERAPY ON OSTEOPOROSIS IN PATIENT WITH CHRONIC DISEASE: A
SYSTEMATIC REVIEW



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FACULTY OF MEDICINE
UNIVERSITAS AIRLANGGA

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To fulfil The Requirement of Research Block
Universitas Airlangga Faculty of Medicine

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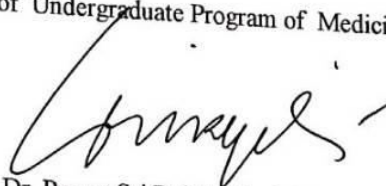
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THE CORRELATION OF LOW DOSE AND LONG TERM CORTICOSTEROID
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THESIS

by

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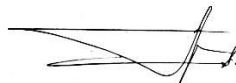
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ACKNOWLEDGEMENT

Finally, the writer can complete the preparation of this thesis even with various obstacles during the preparation period. The author would like to thank the people who have made this thesis possible:

1. Dr. Mohammad Nasih, S.E., M.T., Ak., CMA as Chancellor of Airlangga University and the ranks of the Rectors for the 2015-2025 period who have facilitated writer education at Airlangga University;
2. Prof. Dr. Budi Santoso, dr., Sp.OG(K) as the Dean of the Faculty of Medicine, Airlangga University and the Dean's staff for the 2020-2025 period who have facilitated educational writers at the Faculty of Medicine, Airlangga University; and Prof. Dr. Soetojo, dr., Sp.U(K) as the Dean Emeritus of the Faculty of Medicine, Airlangga University and the ranks of the Deans for the 2015-2020 period who have facilitated the author's education at the Faculty of Medicine, Airlangga University;
3. Dr. Purwo Sri Rejeki, dr., M.Kes. as the Coordinator of the Medical Study Program for the 2020-2025 period who has facilitated the author's education in the Medical Study Program, Faculty of Medicine, Airlangga University and Dr. Maftuchah Rochmanti, dr., M.Kes. as the Coordinator of the Medical Study Program for the 2015-2020 period who has facilitated the writer's education at the Medical Study Program, Faculty of Medicine, Airlangga University;
4. Pradana Zaky Romadhon, dr., SpPD. KHOM FINASIM, For guiding my thesis from the very beginning in determining the title until making the paper for my thesis right now.
5. Andre Triadi Desnantyo, dr., Sp.OT(K) as my 2nd supervisor which help me a lot through critical appraisal to make this paper quality better.

6. Satriyo Dwi Suryanto, dr., SpPD due to time allocation given to me to assess my thesis.
7. My family: parents (Muslichah Erma Widiana and Haryo Indrayono) and brother (Bagus Fidiandra) for keep asking about the progress of my research paper.

THE CORRELATION OF LOW DOSE AND LONG TERM CORTICOSTEROID THERAPY ON OSTEOPOROSIS IN PATIENT WITH CHRONIC DISEASE: A SYSTEMATIC REVIEW

SUMMARY

Corticosteroids are frequently used as immunosuppressants and strong anti-inflammatories; some patients must take the medicine for more than three months. In the general population, from 2% of women under the age of 50 take corticosteroids, especially in the case of patients with chronic diseases who do so as a form of treatment. Glucocorticoid-induced osteoporosis (GIOP) affects 38% of the population of people who received corticosteroids overall (Adami, Rahn and Saag., 2019). According to certain studies from Europe and the United States, the prevalence of GC use ranges from 0.7% to 17.1%. (2013) and (Overman RA, Yeh JY, Deal CL) (Laugesen K et al, 2017).

Glucocorticoid-induced osteoporosis is the secondary cause of osteoporosis and eventually leads to fracture due to the patient's declining bone mineral density with continued usage of the medication. A side effect of glucocorticoids is osteoporosis, which inhibits bone production and is followed by an increase in bone resorption. It has an impact on PPARR2 and boosts the expression of sclerostin, which inhibits osteoblast formation and raises the RANKL/OPG ratio to promote osteoclast differentiation and activation. Therefore, a fracture risk assessment should be performed as soon as the therapy starts, and where necessary, vitamin D can be given to the patient as a preventative measure for low bone mineral density.

Based on the data that from articles patient with chronic disease who consume low dose and long-term corticosteroid show no significant effect upon bone mineral density, therefor the patient able to consume corticosteroid in dose and duration dependent manner.

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Muhammad Brahma Dwianandra, Pradana Zaky Romadhon, Andre Triadi
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ABSTRACT

Background: Corticosteroids are frequently used as immunosuppressants and strong anti-inflammatories; some patients must take the medicine for more than three months. In the general population, 2% of women under the age of 50 take corticosteroids, particularly in the case of patients with chronic diseases who do so as a form of treatment. A total of 19.6% to 38% of the population who took corticosteroids went on to develop glucocorticoid-induced osteoporosis.

Method: The method is looking for articles which consist of many study design which include the data upon patient with chronic disease who consume corticosteroid more than 3 months and most of the study population consume low dose. The patient bone mineral density assessment is using DXA scan, no diabetic patient included, patient consume supplementation or treatment for osteoporosis, and paediatric patient also excluded. For the article from databases we exclude review article, experimental study, and we only include English language article only.

Result: results of bone mineral density from DXA scan shows that femoral neck t score show -0,30 and other two Z score show -0,29 and -0,83. From the result of vertebrae BMD shows that T-score of -0,3 and Z score of -0,75 and 0,07. A single article show the BMD of forearm is -1,2 and lastly T-score show 0,41 on whole body BMD.

Conclusion: From 7 article obtained from searching and filtering of article. The article found to observe the effect of low dose and long-term corticosteroid to bone mineral density in patient with chronic disease is not significant, which also being influenced by multi factorial such as the onset of disease, part of the bone that assessed, and others

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LIST OF ABBREVIATIONS

BAFF	- B cell Activating Factor
BMD	- Bone Mineral Density
COX	- Cyclooxygenase
CSF-1	- Colony Stimulation Factor 1
CYP	- Cytochrome P
DEXA	- Dual Energy X-ray Absorbtiometry
DM	- Diabetes Melitus
GC	- Glucocorticoid
GIOP	- glucocorticoid induced osteoporosis
Gp	- glycoprotein
HIV	- human immunodeficiency virus
IL	- interleukin
ITP	- Idiopathic Thrombocytopenic Purpura
IVIG	- intravein immunoglobulin
LRP	- Low-density Receptor Related Protein
NSAID	- Non-Steroid Anti Inflammatory Drugs
OPG	- Osteoprotegerin
PPAR	- peroxisome proliferator activated receptor
QCT	- Quantitative Computed Tomography
QUS	- Quantitative Ultrasonography
RA	- Rheumatoid Arthritis
RANKL	- Receptor Activator of Nuclear Factor Ligand
RES	- reticuloendothelial system
SLE	- systemic lupus erythematus

SOP	- standard of procedure
TGF	- tumor growth factor
Th	- T helper
TNF	- tumor necrotic factor
TPO	- Thrombopoeitin
T-regs	- T regulator cells
Wnt	- Wingles Related I