

CHARACTERISTICS OF ELDERLY OSTEOARTHRITIS PATIENTS AT RSUD DR. H. CHASAN BOESOIRIE

Hapsari Ardha Garini^{1*}, Abd. Azis Manaf², Muh. Dahlan³

¹Medical Study Program, Faculty of Medicine, Khairun University, Ternate, Indonesia

²Department of Internal Medicine, Faculty of Medicine, Khairun University, Ternate, Indonesia

³Department of Anesthesiology, Faculty of Medicine, Khairun University, Ternate, Indonesia

ABSTRAK

Article History:

Submitted: 28/02/2024

Accepted: 18/09/2024

Published: 30/09/2024

Keywords:

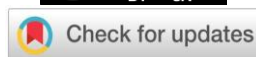
Osteoarthritis,
Elderly,
Dr.H. Chasan Boesoirie
Hospital

Abstract:

Osteoarthritis (OA) is a degenerative joint disease that is still a public health problem, especially among the elderly. This problem is caused by the high prevalence of OA and its chronic and progressive nature. The objective of this study was to determine the characteristics of elderly OA patients at Dr H. Chasan Boesoirie Hospital which is a referral hospital centre. This study is a descriptive study approach to 43 samples of elderly OA patients at Dr. H. Chasan Boesoirie Hospital taken using medical record data with total sampling technique. Of the 43 samples, 86.0% were elderly (60-74 years old), 51.2% were female, 46.5% were housewives, 83.7% were located in the knee joint, 39.5% had a Body Mass Index with obesity category I, and 72.1% had comorbidities. The distribution of OA patients at RSUD. Dr. H. Chasan Boesoirie tends to increase in the elderly group (60-74 years), especially in individuals who are female, and work as housewives. Regarding the location of the affected joints, the most common is found in the knee joint, especially in individuals with BMI category of obesity I. The most common comorbidities found in OA patients in this study were is having more than 1 comorbidity.

Abstrak:

Osteoarthritis (OA) merupakan suatu penyakit degeneratif sendi yang masih menjadi permasalahan kesehatan masyarakat terutama pada kalangan lanjut usia. Permasalahan ini disebabkan oleh prevalensi OA yang cukup tinggi serta sifatnya yang kronik dan progresif. Tujuan penelitian ini adalah untuk mengetahui karakteristik pasien OA lanjut usia di RSUD Dr. H. Chasan Boesoirie yang merupakan pusat Rumah Sakit rujukan di Maluku Utara. Penelitian ini merupakan penelitian deskriptif terhadap 43 sampel pasien OA lansia di RSUD Dr. H. Chasan Boesoirie yang diambil menggunakan data rekam medik dengan teknik total sampling. Dari 43 sampel ditemukan 86,0% berusia lanjut usia (60-74 tahun), 51,2% berjenis kelamin perempuan, 46,5% ibu rumah tangga, 83,7% berlokasi di sendi lutut, 39,5% memiliki Indeks Massa Tubuh dengan kategori obesitas I, dan 72,1% memiliki penyakit penyerta. Distribusi pasien OA di RSUD. Dr. H. Chasan Boesoirie cenderung meningkat pada kelompok lanjut usia (60-74 tahun), khususnya pada individu yang berjenis kelamin perempuan, dan bekerja sebagai ibu rumah tangga. Terkait dengan lokasi sendi yang terkena paling banyak ditemukan pada sendi lutut, terutama pada individu dengan kategori IMT obesitas I. Adapun penyakit penyerta yang paling banyak ditemukan pada pasien OA dalam penelitian ini adalah memiliki lebih dari 1 penyakit penyerta.



*Corresponding Author:

Hapsari Ardha Garini,
Medical Study Program, Faculty of Medicine,
Khairun University,
Ternate, Indonesia.
Email: ardharrinn@gmail.com

How to Cite:

H.A. Garini, A.A. Manaf, M. Dahlan "Characteristics Of Elderly Osteoarthritis Patients At Rsud Dr. H. Chasan Boesoirie", Indonesia. J. Heal. Sci., vol. 8, no. 2, pp. 192-199, 2024.

INTRODUCTION

Osteoarthritis (OA) is a degenerative disease that is common in the elderly, is chronic, and usually affects the hip, knee, spine and ankle [7]. OA is most commonly associated with cartilage damage of the spine, hip, knees, and ankles [16]. OA degeneration of bone cartilage and formation of new bone of osteophytes at the edges as well as in the subchondral region of the joint [9].

According to the World Health Organization (WHO), in 2019 there were approximately 528 million people in the world suffering from OA [19]. According to data from the National Riskesdas Report in 2018, the prevalence of osteoarthritis in Indonesia in the population of all ages based on a doctor's diagnosis reached 713,783 cases [10]. According to data from the North Maluku Province Report on Riskesdas in 2018, the prevalence of osteoarthritis in the population of all ages based on a doctor's diagnosis was 9,907 cases. Of the total osteoarthritis cases in North Maluku, 1,993 osteoarthritis cases were found in Ternate City [11]. The prevalence of osteoarthritis is expected to continue to increase as the population ages and obesity and injury rates increase [19].

The high prevalence of OA and its chronic and progressive nature make OA a problem with a high socio-economic impact. This is because it is estimated that 1 to 2 million elderly people in Indonesia suffer from disability due to OA.

Research by Nafi'ah et al (2023) states that OA is more commonly found in the elderly (>65 years), women, and individuals who have an overweight Body Mass Index (BMI). Research conducted by Cahyani, Yuniati and Retnaningrum (2022) also stated that the highest percentage of OA incidence was found in the age group > 60 years, the highest OA sufferers were women, and the most OA location was knee OA.

Based on the explanation above and also because there has been no research on the characteristics of OA patients in the elderly in North Maluku Province, especially at RSUD Dr. H. Chasan Boesoirie, the researcher is interested in conducting research on the characteristics of OA patients in the elderly at RSUD Dr. H. Chasan Boesoirie. The difference between this research and previous research was in the location and research variables. The purpose of this study was to determine the characteristics of elderly OA patients at RSUD Dr. H. Chasan Boesoiris.

RESEARCH METHOD

This study is a descriptive study at Dr. H. Chasan Boesoirie Hospital in 2018-2023. All OA patients at Dr H. Chasan Boesoirie Hospital in 2018-2023 who met the inclusion and exclusion criteria were 43 samples. The inclusion criteria in this study were elderly patients diagnosed with OA at Dr. H. Chasan Boesoirie Hospital.

This study is a secondary data study obtained from the medical records of osteoarthritis patients at Dr. H. Chasan Boesoirie Hospital in January 2018 to December 2023 and using *total sampling* technique. Data processing in this study used univariate analysis techniques. The data were processed with *Statistical Package for the Social Sciences* and then the results will be presented in the form of distribution tables, diagrams, and also narratives. This research was conducted by first applying for a research permit to the Faculty of Medicine, Khairun University and RSUD Dr H. Chasan Boesoirie. In the implementation of the study, researchers will also maintain the confidentiality of data from patient medical records used as research instruments

RESULT AND DISSCUSION

Based on research conducted on 3-19 January 2024, 43 samples were obtained that met the inclusion and exclusion criteria.

Table 1
Characteristics of Osteoarthritis Patients

Variables	N	%
Age		
Elderly	37	86,0
Old Age	6	14,0
Very Old Age	0	0
Total	43	100
Gender		
Male	21	48,8
Female	22	51,2
Total	43	100
Jobs		
Retired	11	25,6
Self-employed or Merchl	5	11,6
Private Employee	4	9,3
Housewife	20	46,5
Fisherman/Farmer/ Labourer	3	7,0
Total	43	100
Location of the Joint Exposed		
Hand	3	7,0
Knees	36	83,7
Feet	1	2,3
Vertebra	3	7,0
Total	43	100
Body Mass Index		
Underweight	2	4,7
Normal Weight	9	20,9
Overweight	9	20,9
Obesity I	17	39,5
Obesity II	6	14,0
Total	43	100
Comorbidities		
Available	31	72,1
None	12	27,9
Total	43	100

Table 2
Distribution of Comorbidities

Distribution of Comorbidities	(N)	(%)
Diabetes Mellitus	5	16,1
Hypertension	3	9,7
Heart Disease	3	9,7
Gout Arthritis	6	19,4
>1 comorbidities	14	45,2
Total	31	100

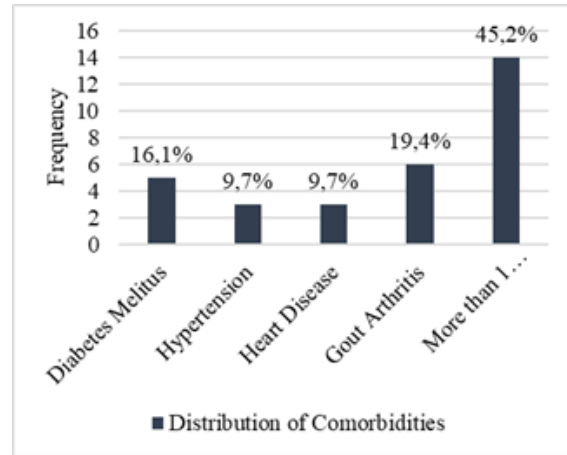


Figure 1. Distribution of comorbidities

Characteristics of Osteoarthritis Patients at RSUD DR H. Chasan Boesoirie Based on Age

Based on the results of the study, it was found that the age of OA patients at RSUD DR. H. Chasan Boesoirie was mostly in the elderly age group (60 - 74 years) as many as 37 samples (86.0%). This is in line with research on 65 samples at Abdul Wahab Sjahraine Samarinda Hospital found the most age distribution at the age of > 60 years as many as 27 samples (41.5%) [2]. This is also in line with research conducted on 124 samples at the Ibnu Sina Hospital Makassar found the most age distribution in the age group >65 years as many as 46 samples (37.1%) [12].

Age is a major factor that causes changes in the biological ageing process. One aspect of these changes is related to a decrease in sirtuin activity in the mitochondria, which plays a role in the cellular ageing process. This decreased activity can lead to increased production of ROS (Reactive Oxygen Species) and inflammation, as well as decreased autophagy. The impact of these changes involves increased production of inflammatory mediators such as matrix metalloproteinases and cytokines. The accumulation of cytokines and other inflammatory mediators can trigger damage to the cartilage, and these changes are not followed by a repair process. The balance of regeneration and homeostasis in the

joints is also disturbed due to this aging process [5].

In normal aging, there is an accumulation of advanced glycation end products making the joint surfaces thinner, smoother and more intact than in young adults. This will change the biomechanical properties of the cartilage making it more fragile and prone to degeneration. In contrast, joints affected by OA have injuries characterized by loss of cartilage followed by the onset of osteophytes and subchondral thickening which is influenced by various subchondral thickening which is influenced by various risk factors in addition to age to the incidence of OA [1].

Characteristics of Osteoarthritis Patients at RSUD DR H. Chasan Boesoirie Based on Gender

Based on the research results, it was found that the gender of OA patients at RSUD DR. H. Chasan Boesoirie was mostly female in as many as 22 samples (51.2%). This is in line with research conducted on 65 samples at Abdul Wahab Sjahraine Samarinda Hospital found OA patients were dominated by women in as many as 53 samples (81.5%) [2]. This study is also in line with research conducted on 124 samples at Ibnu Sina Hospital Makassar found the highest proportion was in women as many as 79 samples (63.7%) [12].

Estrogen has a role in increasing the production of proteoglycans (components of the extracellular matrix) to provide lubrication to the body's joints and regulate changes in the subchondral bone. In addition, estrogen affects the regulation of the function of cells within the cartilage. In women, a decrease in estrogen levels can result in reduced proteoglycan formation, which leads to a lack of lubrication in the joints and may increase the risk of OA [12].

The hormones have an important role in maintaining bone density. Estrogen has a protective effect against disease progression, which is caused by an increase in estrogen receptors on chondrocyte cells

that increases the synthesis and production of proteoglycans. Estrogen is also involved in maintaining the balance of matrix metalloproteinases (MMPs) by inhibiting them [15]. However, in men, testosterone plays a role in reducing body fat and inhibiting osteoclast activity to protect bone. However, its mechanism of action is still not fully understood [14].

Characteristics of Osteoarthritis Patients at RSUD DR H. Chasan Boesoirie Based on Occupation

Based on the results of the study, it was found that most occupations of OA patients at DR. H. Chasan Boesoirie Hospital were in the occupation as housewives as many as 20 samples (46.5%). This is in line with research conducted on 124 samples at Ibnu Sina Hospital Makassar found the most work was in the work as housewives as many as 56 samples (45.2%) [12]. This is also in line with research conducted on 60 samples at Sanglah General Hospital found the most work was in the occupation as a housewife, namely 19 samples (31.7%) [4].

OA in housewives can result from repetitive mechanical stress due to the performance of routine household tasks every day [12]. This happens because household tasks performed by housewives can be classified as light to moderate activities, which require the use of joints in daily activities [17].

Characteristics of Osteoarthritis Patients at RSUD DR H. Chasan Boesoirie Based on the Location of the Affected Joints

Based on the results of the study, it was found that based on the location affected in OA patients at the DR. H. Chasan Boesoirie Hospital, the highest number was in the knee as many as 36 samples (83.7%). This is in line with research conducted on 65 samples at Abdul Wahab Sjahraine Samarinda Hospital found the most OA location was in the knee as many as 50 samples (76.9%) [2].

This study is also in line with research conducted on 124 samples at Ibnu Sina Hospital Makassar found the most OA location was in the knee as many as 114 samples (91.9) [12].

A person who engages in strenuous physical activity has a five times higher risk of developing OA of the knee than those who do not engage in strenuous physical activity. Strenuous physical activities, such as prolonged standing (more than 2 hours daily), walking long distances (more than 2 hours daily), and going up and down stairs regularly, are risk factors for developing OA of the knee. Walking is the most common activity performed by people and is an activity that puts strain on the joints by supporting the body weight. Excessive pressure on the cartilage of the knee joint that persists can lead to degeneration. Meniscus and tears can trigger changes to the cartilage of the knee joint, thus increasing the risk of OA in the knee [17].

Characteristics of Osteoarthritis Patients at RSUD DR H. Chasan Boesoirie Based on Body Mass Index

Based on the results of the study, it was found that the highest BMI in OA patients at RSUD DR. H. Chasan Boesoirie was obesity I, namely 17 samples (39.5%). This is in line with research conducted on 124 samples at Ibnu Sina Hospital Makassar found the most IMT with obesity I, namely 38 samples (30.6%) [12]. This is also in line with research conducted on 36 samples at Airlangga University Hospital Surabaya found the most BMI with obesity I as many as 28 samples (77.8%) [6].

Obesity increases the load exerted on joints, which can accelerate damage to various joint components. Increased load on joints, especially weight-bearing joints such as the knee, can accelerate the risk of damage to cartilage and other joint structures [6].

Body mass index has a close relationship with the mechanical load applied to the knee, and the prevalence of

OA in the knee is often associated with mechanical influences from other joints. Excessive loading on the knee caused by being overweight, may affect the quality of the cartilage. Excess weight not only affects cartilage durability through degeneration and fluid depletion but also reduces compressibility, so direct pressure on the knee can result in proteoglycan degradation and fracture of the collagenous tissue [5].

Characteristics of Osteoarthritis Patients at RSUD DR H. Chasan Boesoirie Based on Comorbidities

Based on the research results on the study, it was found that OA patients at RSUD DR. H. Chasan Boesoirie with the presence of comorbidities as many as 31 samples (72.1%). This is in line with research conducted by Dr Pirngadi Medan Hospital on 96 samples found the presence of comorbidities as many as 68 samples (70.8%) [17]. This study is also in line with research conducted on 70 samples at RSUP Dr. Sardjito Yogyakarta found the presence of comorbidities in 54 samples (77.1%) [8].

The distribution of comorbidities in this study was most commonly obtained with more than 1 comorbidity, namely 14 sample (45.2%%). This is in line with research conducted on 70 samples at Dr Sardjito Hospital Yogyakarta which found that 39 samples (55.7%) had more than 1 comorbidity [8].

In the aging process, there is a decline in the function of various body systems that can lead to the emergence of diseases in these systems in elderly people [16]. OA patients often have one or more chronic comorbid conditions. In the elderly population, OA is the most common condition that co-occurs with a variety of other chronic conditions. A number of comorbidities are common in OA patients. Factors such as increasing age, decreased physical activity, and obesity may explain the high prevalence of OA along with other chronic conditions such as diabetes, hypertension, and heart disease. The

relationship between OA and other comorbidities is complex. Inflammatory processes that occur in all ageing tissues may play a role in the development of OA and may help explain its correlation with other comorbidities [13].

Diabetes mellitus plays an important role in accelerating OA disease even in the early stages, but the exact causative pathways is still unknown. Hyperglycemic conditions can increase inflammation in the microcellular environment. Although the complete pathogenesis is still unknown, AGEs (Advance Glycation End Products) have a central role in the continuation of the inflammatory process in any part of the joint anatomy. The increased inflammation can then accelerate tissue and cell damage, thereby increasing the progression of OA [3].

Hypertension and OA are diseases with high prevalence. Some studies suggest that there may be shared risk factors involved in the relationship between hypertension and OA. One possible explanation for the association between hypertension and OA is common risk factors, such as ageing, obesity, and chronic inflammation. In addition, some studies suggest that polymorphisms in the vitamin D receptor may be associated with low bone mineral density, OA, and hypertension [20].

Mechanisms underlying the association between OA risk and cardiovascular disease (CVD) or heart and blood vessel disease are still not fully understood, but several factors may explain this correlation. First, both conditions have some similar risk factors. Secondly, the drugs that are commonly prescribed to manage pain in OA patients are NSAIDs. Third, patients with OA tend to be less physically active due to severe joint pain. Fourth, the main pathologies in CVD include arterial thickening, stiffness, and atherosclerosis, resulting in a lack of tissue perfusion (ischemia) [18].

CONCLUSION

Osteoarthritis patients at Dr H. Chasan Beosoerie Hospital tend to be found mostly in the elderly group (60-74 years), female gender, housewife occupation, and more often experience osteoarthritis in the knee joint. In addition, the majority of patients have a BMI Obesity I category and have more than 1 comorbidity.

This study can determine the distribution of osteoarthritis patients in the elderly based on aspects of age, gender, occupation, affected location, body mass index, and comorbidities. It is recommended that the head of the health facility use the result of this study as a reference in making health promotion programs related to osteoarthritis in the elderly. And to further researchers can develop this research by looking for the relationship between variables with the incidence of osteoarthritis in the elderly. Limitations in the study were missing medical record data so the distribution of the sample obtained was small.

ACKNOWLEDGMENTS

The author would like to thank to Medical Faculty of Khairun University dan RSUD Dr. H. Chasan Boesoerie who has contributed to this research, so that this research can be carried out and completed properly.

REFERENCES

- [1] Anggraini, T. D. and Sjarqiah, U. 'Karakteristik Pasien Geriatri dengan Osteoarthritis Genu yang Mendapatkan Terapi Rehabilitasi Medik di Rumah Sakit Islam Jakarta Sukapura Tahun 2019', *Muhammadiyah Journal of Geriatric*, 2(2), p. 40, 2022. doi: 10.24853/mujg.2.2.40-48.
- [2] Cahyani, U. N., Yuniati and Retnaningrum, Y. R. 'Karakteristik Penderita Osteoarthritis Di Rsud Abdul Wahab Sjahranie Samarinda Periode 2017-2020', *Jurnal Verdure*, 4(1), pp. 216-227, 2022. Available at:

- <https://jurnal.stikesmm.ac.id/index.php/verdure/article/view/20>.
- [3] Chowdhury, T. *et al.* 'The Association Between Diabetes Mellitus and Osteoarthritis: Does Diabetes Mellitus Play a Role in the Severity of Pain in Osteoarthritis?', *Cureus*, 2022 doi: 10.7759/cureus.21449.
- [4] Claudia, G., Saturti, T. I. A. and Kurniari, P. K. 'Karakteristik Penderita Osteoarthritis Lutut di RSUP Sanglah Periode Januari-Juni 2018', *Juli*, 9(7), pp. 23–28, 2020. doi: :10.24843.MU.2020.V9.i7.P05.
- [5] Fadhail, M. A. and Yulianti, A. 'Karakteristik Lansia dengan Risiko Osteoarthritis Lutut di Desa Polehan Kota Malang', *Media Kesehatan Politeknik Kesehatan Makassar*, 17(2), p. 235, 2022. doi: 10.32382/medkes.v17i2.2818.
- [6] Husnah, S. E. *et al.* 'Pasien Osteoarthritis Genu dengan Obesitas di Rumah Sakit Universitas Airlangga Surabaya', *Jurnal Ilmiah Kesehatan*, 1(2), pp. 102–109, 2019. doi: <https://doi.org/10.36590/jika.v1i2.30>.
- [7] IRA *Rekomendasi Perhimpunan Reumatologi Indonesia Untuk Diagnosis dan Penatalaksanaan Osteoarthritis*, 2014. Available at: https://reumatologi.or.id/wp-content/uploads/2020/10/Rekomendasi_Osteoarthritis_2014.pdf.
- [8] Ismail, A. 'Gambaran Health Related Quality of Life (HRQoL) Penderita Osteoarthritis Berdasarkan Penyakit', *Jurusan Farmasi FKIK Uinam*, 6(2), pp. 2–7, 2018. Available at: https://journal.uin-alauddin.ac.id/index.php/jurnal_farmasi/article/view/6755.
- [9] Jennifer P. Kowalak, Welsh, W. and Meyer, B. *Buku Ajar Patofisiologi*. Jakarta: Penerbit Buku Kedokteran EGC, 2020.
- [10] Kementerian Kesehatan RI *Laporan Nasional Riset Kesehatan Dasar 2018*. Jakarta: Lembaga Penerbit Badan Penelitian dan Pengembangan Masyarakat, 2019a. Available at: <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/>.
- [11] Kementerian Kesehatan RI *Laporan Provinsi Maluku Utara Riskesdas 2018, Dinas Kesehatan Maluku Utara*. Jakarta: Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan, 2019b. Available at: https://repository.badankebijakan.kemkes.go.id/id/eprint/3902/1/LaporanRiskesdas_Maluku_Utara_2018.pdf.
- [12] Nafi'ah, S. N. A. *et al.* 'Karakteristik Pasien Osteoarthritis pada Unit Rawat Jalan di Rumah Sakit Ibnu Sina Makassar Tahun 2018-2021', *Fakumi Medical Journal*, 3(5), pp. 359–367, 2023. Available at: <https://fmj.fk.umi.ac.id/index.php/fmj/article/view/219>.
- [13] Osteoarthritis Action Alliance 'Comorbidities and Co-Occurring Symptoms - Osteoarthritis Action Alliance', 2019 Available at: <https://oaaction.unc.edu/oa-module/comorbidities-and-co-occurring-symptoms/>.
- [14] Pratama, A. D. 'Intervensi Fisioterapi pada Kasus Osteoarthritis Genu di RSPAD Gatot Soebroto', *Jurnal Sosial Humaniora Terapan*, 1(2), pp. 21–34, 2019. Available at: <https://scholarhub.ui.ac.id/jsht/vol1/iss2/5/>.
- [15] Rahmadiyahanti, N., Tresnasari, C. and Alie, I. R. 'Hubungan Antara Usia dan Jenis Kelamin dengan Derajat Keparahan Osteoarthritis Lutut di RS Al-Islam Bandung Periode 1 Januari 2013-31 Desember 2015', *Prosiding Pendidikan Dokter*, 2(2), pp. 764–771, 2016. Available at: <https://karyailmiah.unisba.ac.id/index.php/dokter/article/view/480>.
- [16] Sudoyo, A. W. *et al.* *Buku Ajar Ilmu Penyakit Dalam Jilid I*. 6th edn. Jakarta: Interna Publishing, 2014.
- [17] Wahyuni, N. 'Karakteristik Penderita Osteoarthritis Rawat Jalan di RSUD

- Dr.Pirngadi Medan', *Jurnal Keperawatan Flora*, 10(1), pp. 34–42, 2017. Available at: <https://www.jurnal.stikesflora-medan.ac.id/index.php/jkpf/article/view/65>.
- [18] Wang, H. *et al.* 'Osteoarthritis and the Risk of Cardiovascular Disease: a Meta-Analysis of Observational Studies', *Scientific Reports*, 6(1), p. 396 72, 2016. doi: 10.1038/srep39672.
- [19] WHO *Osteoarthritis, Fact Sheet.* (2023) Available at: <https://www.who.int/newsroom/factsheets/detail/osteoarthritis> (Accessed: 4 February 2023).
- [20] Zhang, Y., Wang, J. and Liu, X. 'Association Between Hypertension and Risk of Knee Osteoarthritis', *Medicine*, 96(32), p. e7584, 2017. doi:10.1097/MD .00000000000007584.