



## The Relationship Between Personal Hair Hygiene and The Incidence of Pityriasis Capitis in Students at the Faculty of Medicine, Baiturrahmah University

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### ABSTRACT

**Introduction.** Pityriasis capitis or commonly known as dandruff, pityriasis sicca, pityriasis simplex is a disorder resulting from mild inflammation caused by excessive exfoliation of the stratum corneum which is characterized by the presence of white-gray flakes on the scalp and hair shaft. Personal hygiene, including self-care carried out by a person to protect and maintain their health. Aim the research to the relationship between personal hair hygiene and the incidence of pityriasis capitis in students at the Faculty of Medicine, Baiturrahmah University. **Methods.** This study is quantitative research that applies an analytical approach by design cross-sectional. The research participants came from students at the Faculty of Medicine, Baiturrahmah University and total of 108 samples were selected using techniques consecutive sampling. The data in this study is primary data obtained from the results of questionnaires and scalp observations. Data analysis used SPSS version 25 and the test used was chi-square test. **Results.** Students who experience pityriasis capitis are 66 people (61.1%) with the largest gender experience it being women, namely 46 people (42.6%). Personal hair hygiene of students are in the medium category, namely 76 students (70.4%). There is a relationship between personal hair hygiene and the incidence of pityriasis capitis with a p-value of 0.029 ( $p < 0.05$ ). **Conclusion.** There is a relationship between personal hair hygiene and the incidence of pityriasis capitis in students at the Faculty of Medicine, Baiturrahmah University

### 1. Introduction

Pityriasis capitis commonly known as dandruff, pityriasis sicca, pityriasis simplex is a dermatological disorder that affects 50% of the adult population throughout the world and is the most common.<sup>1</sup> Pityriasis capitis is characterized by hyperproliferation of the stratum corneum layer of the epidermis which causes desquamation or gray-white flakes which if excessive in quantity, can disturb the appearance and cause discomfort due to the itching sensation.<sup>2</sup> There are many causes of pityriasis capitis, but the three main causes are the fungus *Pityrosporum ovale* (*Malassezia*), excessive sebaceous gland secretion, and individual vulnerability.<sup>3, 4</sup>

Incidence of pityriasis capitis differs in each particular ethnic group, where 81-95% in African Americans, White people 66-82%, and Chinese people 30-42%. It is estimated that 18% of the population in Indonesia experiences pityriasis capitis and ranks fourth after China, India, and

the United States.<sup>5,6</sup> Pityriasis capitis is more common in men than women, starting at puberty and reaching a peak incidence at the age of 20 years and becoming more severe and decreasing at the age of 50 years because the activity of the sebaceous glands experiences a decrease in function.<sup>7</sup> However, other research entitled "Malassezia Spp & Dandruff" conducted by Rudramurthy in India, it was found that the prevalence of pityriasis capitis patients was higher for women (61%) than for men (39%), and for the age range with the highest percentage of 40%, namely the range 10-19 years and 34% at the age of 20-29 years.<sup>8</sup> Incidence of pityriasis capitis in Padang City can be seen in Primawati et al's 2021 research on hijab-wearing female students at the Faculty of Medicine, Baiturrahmah University, Padang. It was found that the prevalence of dandruff was around 56.0% in 100 respondents from the Class of 2018-2019.<sup>9</sup>

Personal hygiene is included in individual

vulnerability which means health care carried out by a person to maintain health, prevent and eliminate sources of infection, to provide personal well-being, both physical and psychological.<sup>10</sup> One form of personal hygiene is personal hair hygiene needs to be paid attention to because it can trigger various hair problems, one of which is pityriasis capitis due to poor personal hygiene, especially washing hair or shampooing with infrequent frequency.<sup>11</sup> A researcher named Elsa Purmita Sari carried out a study in 2015 entitled "The relationship between stress and scalp cleanliness on the incidence of dandruff" among students at the Faculty of Medicine, Malahayati University. The findings showed that there was a significant relationship between the condition of scalp cleanliness and the incidence of dandruff ( $p=0.000$ ).<sup>12</sup>

Padang City is known for its tropical climate, which includes daily temperatures between 23 to 32 degrees Celsius, and night temperatures ranging from 22 to 28 degrees Celsius. Humidity levels in the city vary between 78 to 81%. This situation easily triggers excessive sweat production, which then supports the fungal growth of *Malassezia* on the scalp. Students are vulnerable to exposure pityriasis capitis, this is because the age of students is included in the highest percentage experiencing pityriasis capitis.<sup>12</sup> Plus, the dense activity of medical students is feared to cause a decrease in awareness and attention to personal hygiene especially one's own hair.<sup>13, 14</sup> The information presented previously indicated that pityriasis capitis is a condition that occurs frequently. Therefore, researchers are interested in exploring whether there is a relationship between personal hair hygiene and the incidence of pityriasis capitis in students at the Faculty of Medicine, Baiturrahmah University. Through this approach, it is hoped that this study can become a reference basis for future research.

## 2. Methods

This study was a quantitative research that applied an analytical approach by design cross-sectional, namely research conducted at one time to determine the relationship between an independent

variable (independent variable), namely personal hair hygiene, and the dependent variable (dependent variable), namely the incidence of pityriasis capitis in students of the Faculty of Medicine, Baiturrahmah University. The statistical analysis used in this study is Chi-Square. In the operational definition of personal hair hygiene, there are three classifications: good, medium, and bad. Personal hair hygiene assessment was carried out by filling out a questionnaire with 15 questions on an ordinal scale with categories of bad  $\leq 5$ , moderate 6-9, and good  $\geq 10$ . The research was carried out over a period of time from September to November 2023, involving 108 participants from students from the Faculty of Medicine, Baiturrahmah University registered in the classes of 2020, 2021, and 2022 who met the inclusion requirements. Inclusion criteria were students at the Faculty of Medicine, Baiturrahmah University who were willing to be research respondents and signed an informed consent. Exclusion criteria were students who did not fill out the questionnaire completely and students who did not come when the research took place. The respondent selection was carried out using the consecutive sampling method. Apart from involving an assessment of the scalp by a dermatologist, primary data in this research were obtained using a questionnaire of personal hair hygiene that had been proven to be valid and reliable.<sup>15, 16</sup> The Faculty of Medicine, Baiturrahmah University has issued ethical approval with letter number 111/ETIK-FKUNBRAH/03/08/2023. Data were analyzed using the chi-square test with  $p$ -value  $< 0,05$ .<sup>17</sup>

## 3. Results

Findings from research regarding the relationship between personal hair hygiene and incidence pityriasis capitis can be explained as follows. Based on Table 1, it was found that 66 respondents (61.1%) experienced pityriasis capitis, while 42 respondents (38.9%) did not.

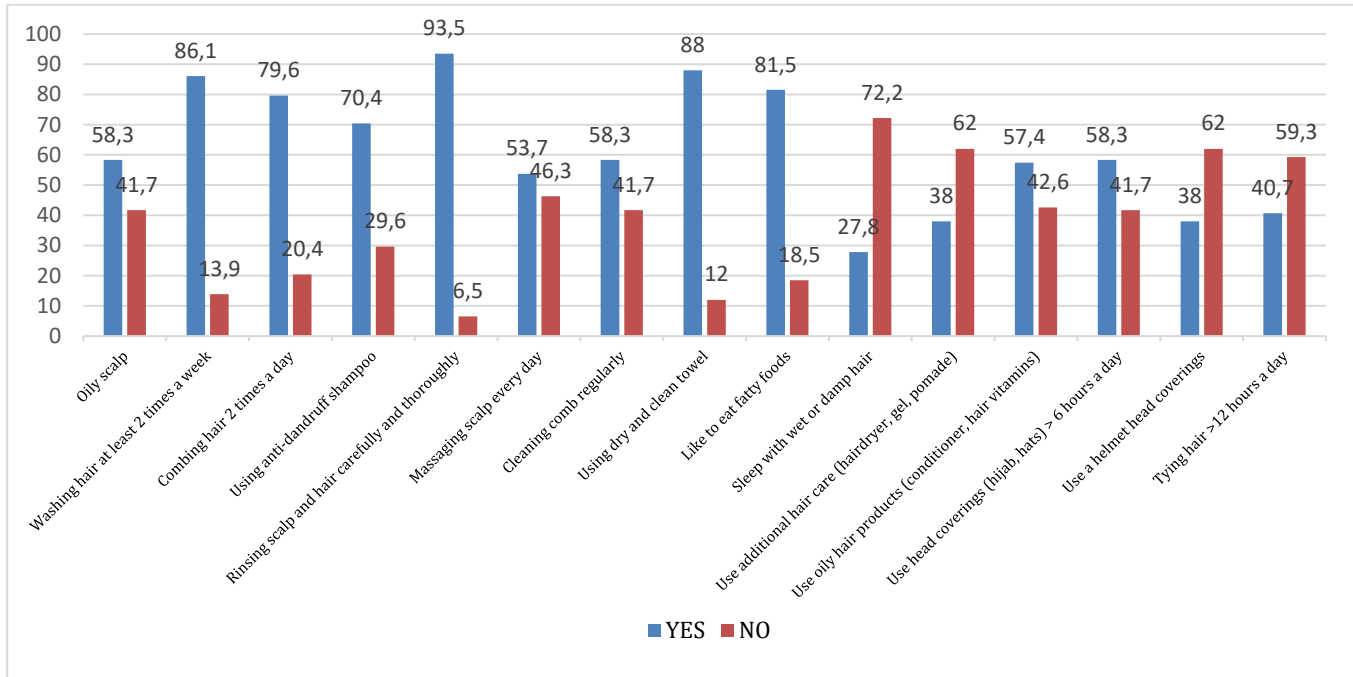
Based on Table 2, shows that female more commonly experienced pityriasis capitis at 46 respondents (42.6%) compared to male at 20 respondents (18.5%). Meanwhile, 17 female respondents (15.7%) and 25 male respondents (23.2%) did not experience pityriasis capitis.

**Table 1. Distribution of frequency of pityriasis capitis incidence in students at the Faculty of Medicine, Baiturrahmah University**

Pityriasis capitis	Frequency (f)	Percentage (%)
Yes	66	61,1
No	42	38,9
Total	108	100,0

**Table 2. Distribution of frequency of pityriasis capitis incidence in students of the Faculty of Medicine, Baiturrahmah University based on gender**

Gender	Pityriasis capitis		No Pityriasis capitis		Total	
	(f)	(%)	(f)	(%)	(f)	(%)
Female	46	42,6	17	15,7	63	58,3
Male	20	18,5	25	23,2	45	41,7
Total	66	61,1	42	38,9	108	100



**Figure 1. Distribution of frequency of personal hair hygiene in students of the Faculty of Medicine, Baiturrahmah University**

**Table 3. Distribution of frequency of personal hair hygiene categories in students of the Faculty of Medicine, Baiturrahmah University**

Personal Hair Hygiene	f	%
Good	32	29,6
Medium	76	70,4
Bad	0	0
Total	108	100,0

**Table 4. Relationship between personal hair hygiene and the incidence of pityriasis capitis in students of the Faculty of Medicine, Baiturrahmah University**

Personal Hair Hygiene	Pityriasis Capitis				Total		P Value	Odds Ratio CI 95%
	Pityriasis Capitis		No Pityriasis Capitis		n	%		
	f	%	F	%				
Medium	52	68,4	24	31,6	76	100	0,029	2,79 (1,191-6,515)
Good	14	43,8	18	56,3	32	100		
Total	66	61,1	42	38,9	108	100		

Based on Figure 1, the largest number of 108 respondents regarding personal hygiene is those who have oily scalp as many as 63 respondents (58.3%), washing hair at least 2 times a week as many as 93 respondents (86.1%), combing hair 2 times a day as many as 86 respondents (79.6%), using anti-dandruff shampoo as many as 76 respondents (70.4%), rinsing the scalp and hair

carefully and cleanly as many as 101 respondents (93.5%), massaging the scalp every day as many as 58 respondents (53.7%), cleaning the comb regularly as many as 63 respondents (58.3%), using a dry and clean towel as many as 95 respondents (88.0%), like to eat fatty foods such as fried foods as many as 88 respondents (81.5%), not sleeping with wet and damp hair as many as 78 people (72.2%),

not using additional hair care (hairdryer, gel, pomade) as many as 67 respondents (62.0%), using oily products (conditioner, hair vitamins) as many as 62 respondents (57.4%), using head coverings (hijab, hats) > 6 hours a day as many as 63 respondents (58.3%), not using head coverings such as helmets as many as 67 respondents (62.0%), and not tying their hair > 12 hours a day as many as 64 respondents (59.3%).

Based on Table 3, shows the most categories personal hair hygiene is in the medium category, namely 76 respondents (70.4%). Based on Table 4, it is concluded that in the good category of personal hair hygiene, there were 14 respondents (43.8%) who experienced pityriasis capitis and 18 respondents (56.3%) did not experience pityriasis capitis. Meanwhile, in the medium category of personal hair hygiene, 52 respondents (68.4%) experienced pityriasis capitis and 24 respondents (31.6%) did not experience pityriasis capitis. This means that personal hair hygiene has an influence on the incidence of pityriasis capitis.

#### 4. Discussion

The results of the study involving 108 respondents from the Faculty of Medicine, Baiturrahmah University, showed that 66 respondents (61.1%) experienced pityriasis capitis. Pityriasis capitis is known as dandruff, which is a disorder that occurs characterized by excessive peeling of the horny layer on the scalp. On participants with pityriasis capitis, dead skin cells will mature and peel off within 2 to 7 days, faster than someone who does not experience pityriasis capitis, which takes about 28 days. So, you must regularly wash your hair with sufficient shampoo at least twice a week. Some factors influence the incidence of pityriasis capitis, namely temperature and humidity. The tropical climate in Padang City causes the weather to become hotter and the humidity is relatively high, as a result the amount of sweat will increase, causing hair to become damp and dirty. The mold *Malassezia*, which is the primary cause of pityriasis capitis, will colonize areas with high levels of sebum, one of which is the scalp and irritate it. Irritation of the scalp will result in rapid scalp regeneration and dead skin cells peeling off, causing manifestations such as white flakes on the scalp and hair. The age range of respondents in this study was around 18-23 years and this age was included in the peak incidence pityriasis capitis. This is because during puberty until the age of 20 years. It is often associated with changes that affect the activity of the sebaceous glands, both women and men mature sebaceous glands begin to produce sebum in large quantities, causing high sebum levels resulting in *Malassezia* fungus increases, due to the high fat content which is a source of nutrition for the *Malassezia* fungus.<sup>1, 8, 18, 19</sup>

The findings of this research are consistent with

research by Joshua Roberto Pratama (2018) on students at the Faculty of Medicine, Andalas University, class of 2017, that the percentage of students who experienced pityriasis capitis quite high, namely 77.6%. Another research by Andi Muhammad Hajrin (2019) on students at the Faculty of Medicine, Hasanuddin University, from 117 samples 88.7% of respondents experienced pityriasis capitis.<sup>18, 20</sup>

In this study, there were 46 respondents (42.6%) women and men experienced this pityriasis capitis namely 20 respondents (18.5%). Ayelin Sriwulan (2022) conducted research on students at the Faculty of Medicine, University of North Sumatra, and her findings provide validity to the findings of this research. A total of 190 people were found to have experienced the incidence of pityriasis capitis, with the majority of patient being women, namely 112 people (86.2%).<sup>4, 8, 21</sup>

One of the factors causing women to tend to experience incidents of pityriasis capitis is related to the inappropriate way of wearing the hijab and the attitude towards maintaining healthy hair when wearing the hijab. Head coverings such as head scarves can increase the temperature and humidity in the hair, causing increased sweat and oil production. This situation creates an optimal environment for the reproduction of the *Malassezia* fungus. Research conducted by Noor Fadhila (2016) revealed that 78 female respondents who wore the hijab experienced dandruff with a prevalence of 71.8% in the age range of 18-23 years. Zahra conducted previous research on students at the Faculty of Medicine, Sebelas Maret University and found that students who wore the hijab had around 7.57 times the risk of experiencing pityriasis capitis.<sup>9, 22</sup>

However, research results from Nur Farida Harum (2017) on 180 students at Airlangga University Surabaya showed that around 50.5% of them were men and 49.5% of women experienced pityriasis capitis. In accordance with research by Misery et al. (2013) who recorded an incidence rate of 20.7% in men and 12.8% in women. Incidence of pityriasis capitis is said to be related to the androgen hormone which is known to be higher in men than women. Moreover, sebaceous gland activity can be influenced by androgen hormones which trigger increased sebum production. This can support the growth of *Malassezia* fungus and increase the risk of occurrence of pityriasis capitis.<sup>5, 23</sup>

Research conducted at the Faculty of Medicine, Baiturrahmah University obtained results from 108 students who had medium category of personal hair hygiene who experienced pityriasis capitis, namely 52 respondents (68.4%) and those who did not experience pityriasis capitis, namely 24 respondents (31.6%). Compared to those who had personal hygiene from respondents, 14 respondents (43.8%) reported having good hair pityriasis capitis and 18

respondents (56.3%) who did not experience pityriasis capitis. To personal hair hygiene in the bad category the results were zero, it is assumed that the sample of this study were students from the Faculty of Medicine, Baiturrahmah University who were assessed as being able to maintain personal hair hygiene well enough, then combined cells into a 2x2 table so that it can be processed to get estimation results odds ratio in this research.

The statistical test findings, namely the chi-square test, produced a p-value of 0.029 ( $p < 0.05$ ). This shows that there is a significant relationship between personal hair hygiene with the incidence pityriasis capitis in students of the Faculty of Medicine, Baiturrahmah University. This research produced an odds ratio of 2.786 which shows that respondents with the personal hair hygiene medium category is 2.786 times more likely to be affected pityriasis capitis compared to respondents with the personal hair hygiene good category. This finding is accompanied by a 95% confidence range in the range of 1,191-6,515.

The personal hair hygiene bad category is one of the extrinsic factors that play an important role in managing and preventing pityriasis capitis. The most crucial hair care steps involve washing the hair, using shampoo, and the combing process. The main goal of this hair care effort is to achieve a healthy and clean scalp and hair condition, so that individuals can feel comfortable and confident in carrying out their daily routine. This research is in accordance with the theory that the more regularly a person cleans their scalp and hair, the lower the incidence rate of pityriasis capitis because cleaning the scalp and hair regularly can reduce excess oil, irritating products *Malassezia* as well as remove dead skin cells on the scalp and hair, apart from that it is necessary to pay attention to the type of additional care for hair and head coverings which are known to have an influence on the occurrence pityriasis capitis and that is part of taking care of it personal hair hygiene.<sup>11</sup>

There are several limitations in this study, namely the research time is considered short at the research procedure stage so researchers have limitations in explaining pityriasis capitis because the 2021 and 2022 classes have not been fully exposed to material regarding pityriasis capitis. When taking scalp photo samples for observation, female respondents experienced difficulties conducting research in a campus environment because the average respondent wore a hijab.

## 5. Conclusion

Research shows that many students at the Faculty of Medicine, Baiturrahmah University have experience with pityriasis capitis, women are the gender group that experiences the most cases of pityriasis capitis. The personal hair hygiene level of students can be categorized as medium, and there is

a relationship between personal hair hygiene with the incidence of pityriasis capitis.

We suggest for educational institutions to be able to add references for further research and library materials in the educational environment. For further researchers, it is expected that further researchers can conduct additional research by looking for other risk factors related to the incidence of pityriasis capitis in a larger sample size.

## 6. Acknowledgements

None

## 7. References

1. Sheth U, Dande P. [Pityriasis capitis: Causes, pathophysiology, current modalities, and future approach](#). Journal of Cosmetic Dermatology. 2021;20(1):35-47.
2. Klarissa EN, Widayati RI, Widyawati W. [Perbandingan Efektivitas Penggunaan Sampo Tradisional Berbahan Merang \(Rice Straw\) dengan Sampo Modern Terhadap Ketombe pada Mahasiswa Fakultas Kedokteran Universitas Diponegoro](#). Jurnal Kedokteran Diponegoro. 2019;8(2):693-700.
3. Park M, Cho Y-J, Lee YW, Jung WH. [Understanding the mechanism of action of the anti-dandruff agent zinc pyrithione against \*Malassezia restricta\*](#). Scientific reports. 2018;8(1):12086.
4. Sriwulan A, Dalimunthe DA, Paramita DA, Widjaja SS, Samosir FAHH. [Gambaran Tingkat Pengetahuan dan Pemilihan Pengobatan Ketombe pada Mahasiswa Fakultas Kedokteran Universitas Sumatera Utara](#). SCRIPTA SCORE Scientific Medical Journal. 2023;4(2):12-8.
5. Harum NF, Djayanti K, Widyanti S, Nurjanah YA, Masrurroh F, Syamsuar M, et al. [Profil Pengetahuan Mahasiswa dalam Mencegah dan Mengatasi Gangguan Ketombe](#). Jurnal Farmasi Komunitas. 2017;4(1):6-10.
6. Yuni A, Utami N. [Faktor-faktor yang menyebabkan kejadian dandruff pada siswi berjilbab di sma muhammadiyah 1 pekanbaru](#). Ensiklopedia of Journal. 2020;3(1):79-88.
7. Borda LJ, Wikramanayake TC. [Seborrheic dermatitis and dandruff: a comprehensive review](#). Journal of clinical and investigative dermatology. 2015;3(2).
8. Rudramurthy SM, Honnavar P, Dogra S, Yegneswaran PP, Handa S, Chakrabarti A. [Association of \*Malassezia\* species with dandruff](#). Indian Journal of Medical Research. 2014;139(3):431-7.
9. Primawati I, Utari M. [Hubungan Pemakaian Jilbab Terhadap Kejadian Ketombe pada Mahasiswi Fakultas Kedokteran Universitas Baiturrahmah](#). Ibnu Sina: Jurnal Kedokteran dan Kesehatan-Fakultas Kedokteran

- Universitas Islam Sumatera Utara. 2021;20(2):113-22.
10. Konuk Sener D, Aydin M, Cangur S. [Evaluating the effects of a personal hygiene program on the knowledge, skills, and attitudes of intellectual disabilities teenagers and their parents.](#) Journal of Policy and Practice in Intellectual Disabilities. 2019;16(3):160-70.
  11. Mohamed HS, Farahat NH, Megallaa NG, Elhaleem M. [Nursing guidelines on hair dandruff symptoms for adult patients.](#) Life Science Journal. 2014;11(1s):323-33.
  12. Sari E. [E Skripsi Hubungan Stres Dan Kebersihan Kulit Kepala Terhadap Kejadian Ketombe Pada Mahasiswa Fakultas Kedokteran Universitas Malahayati Angkatan 2013 Tahun 2015.](#) Faculty of Medicine, Universitas Malahayati, 2019.
  13. Aisuwarya R, Yendri D, Kasoep W, Amelia K, Arifnur AA. [Prototipe Sistem Prakiraan Cuaca Berdasarkan Suhu dan Kelembapan Dengan Metode Logika Fuzzy dan Backpropagation Berbasis Mikrokontroler.](#) Prosiding Semnastek. 2016.
  14. Putri A, Natalia D, Fitriangga A. [Hubungan Personal Hygiene Terhadap Kejadian Pityriasis Capitis Pada Siswi Di SMK Negeri 1 Mempawah Hilir.](#) Jurnal Nasional Ilmu Kesehatan. 2020;2(3):121-9.
  15. Yusup F, [Uji Validitas dan Reliabilitas.](#) Tarbiyah: Jurnal Ilmiah Kependidikan 2018;7(1):17-23.
  16. Sugiono. Metode Penelitian Kuantitatif, Kualitatif dan R&D. Indonesia: ALFABETA; 2017. 334 p.
  17. Maulidina, H. Chi Square. Universitas Esa Unggul. 2020.
  18. Hajrin AM. Hubungan Ketombe Dengan Tingkat Pengetahuan, Kejadian Gatal, Dan Perilaku Individu Pada Mahasiswa Fakultas Kedokteran Universitas Hasanuddin. Faculty of Medicine, Universitas Hasanuddin; 2019.
  19. Nasution SLR. Buku Monograf Ketombe "Efektivitas Ekstrak Daun Jeruk Purut (Citrus Hystrix) Sebagai Anti Ketombe". Medan: Unpri Press; 2021.
  20. Joshua RP. [Hubungan Tingkat Stres Dengan Kejadian Ketombe Pada Mahasiswa Fakultas Kedokteran Universitas Andalas Angkatan 2017.](#) Faculty of Medicine, Universitas Andalas; 2018.
  21. Wikanto JR, Wijaya L, Astiarani Y, Regina R. [Haircare Practice and Dandruff Problems Among Indonesian Medical Students.](#) Journal of General-Procedural Dermatology & Venereology Indonesia.6(2):1.
  22. Fadhila N, Wibowo DA, Widyawati W. [Prevalensi dan Faktor Risiko Terjadinya Ketombe pada Wanita Berjilbab.](#) Faculty of Medicine, Universitas Diponegoro; 2017.
  23. Widowati PD, Zalfani QR, Lestari AV, Syahbana SN, Aksan NR, Putri RYS, et al. [Identifikasi Pengetahuan Dan Penggunaan Produk Antiketombe Pada Mahasiswa UPN Veteran Surabaya.](#) Jurnal Farmasi Komunitas. 2020;7(1):31.