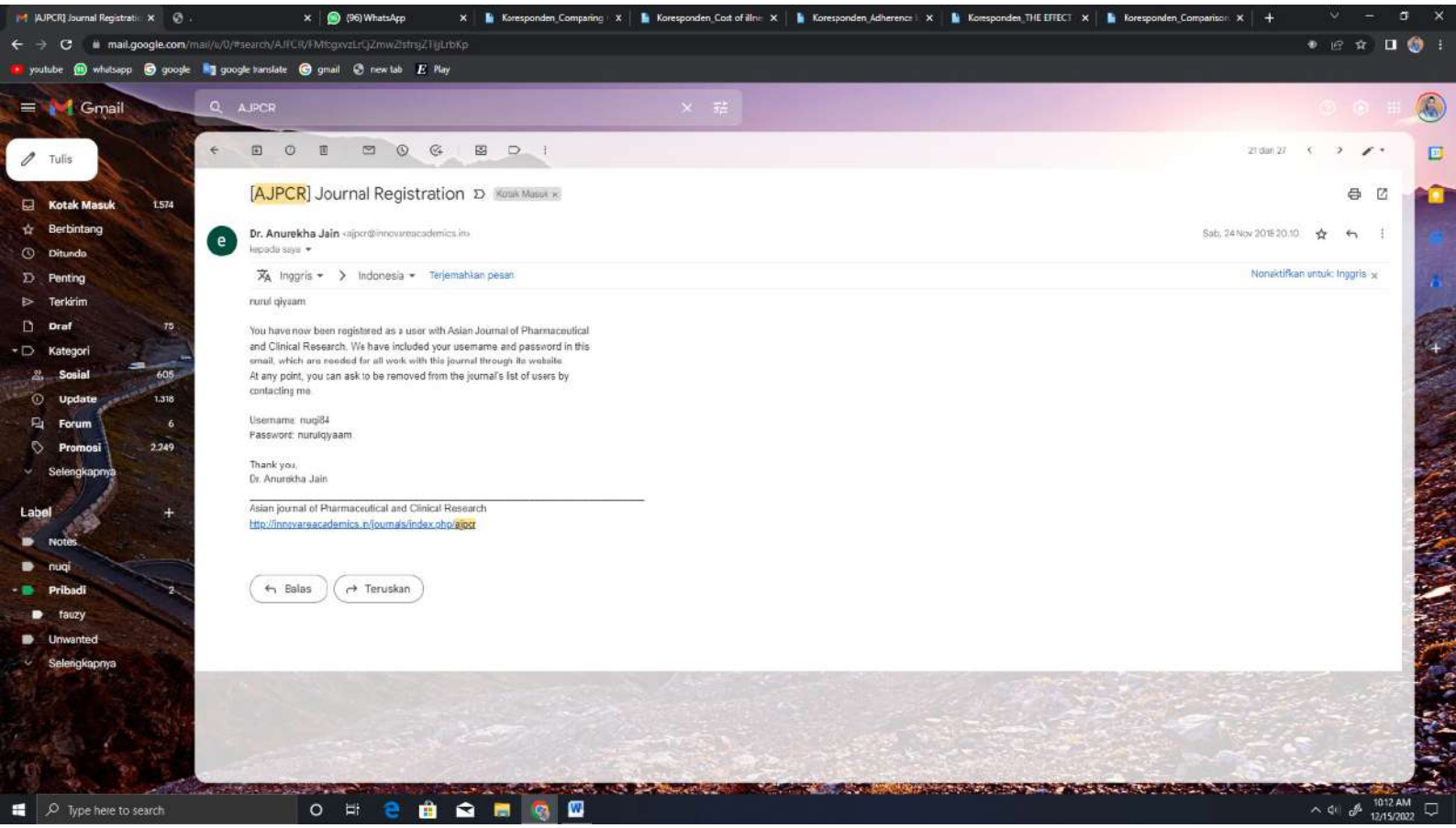
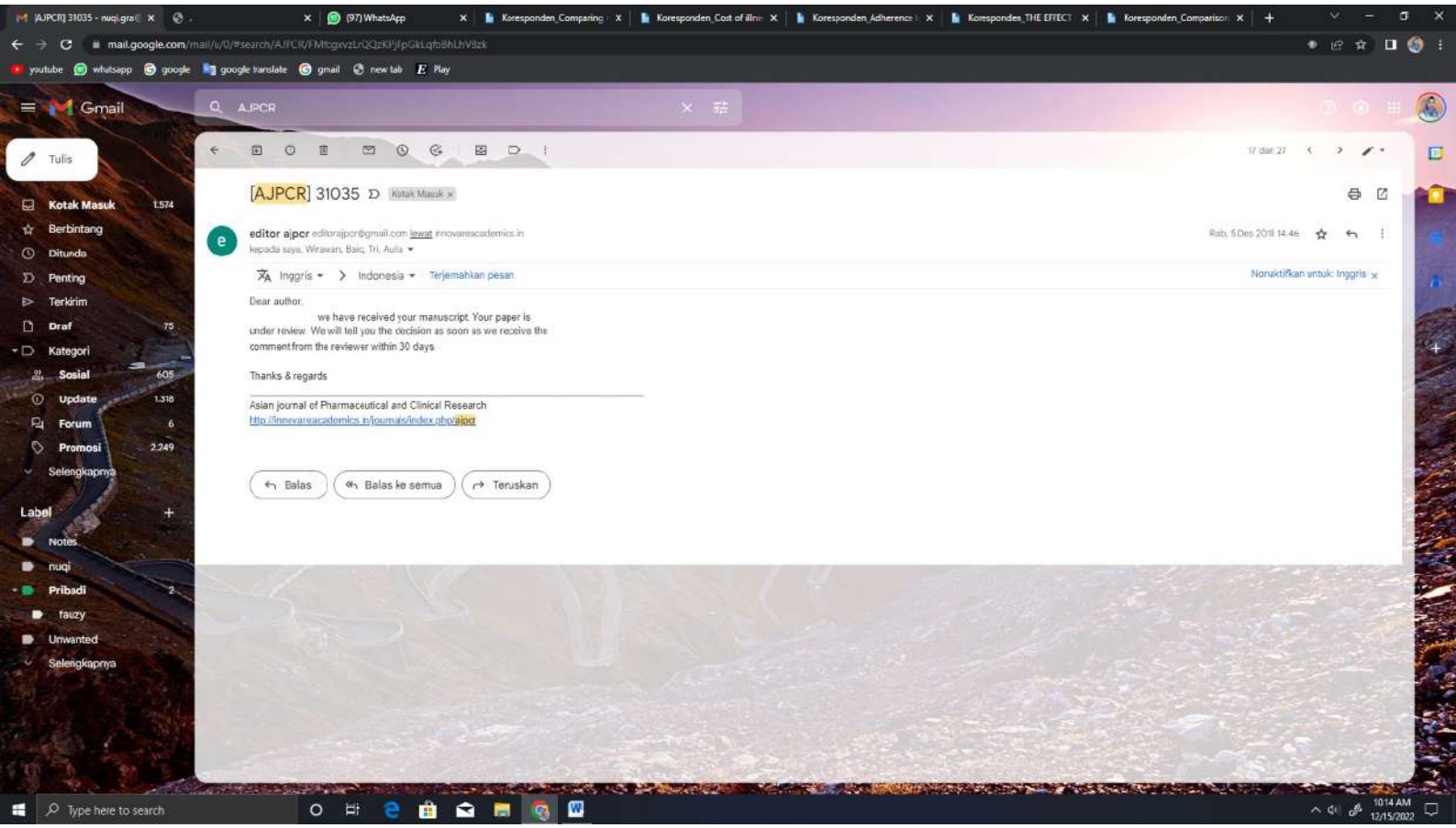
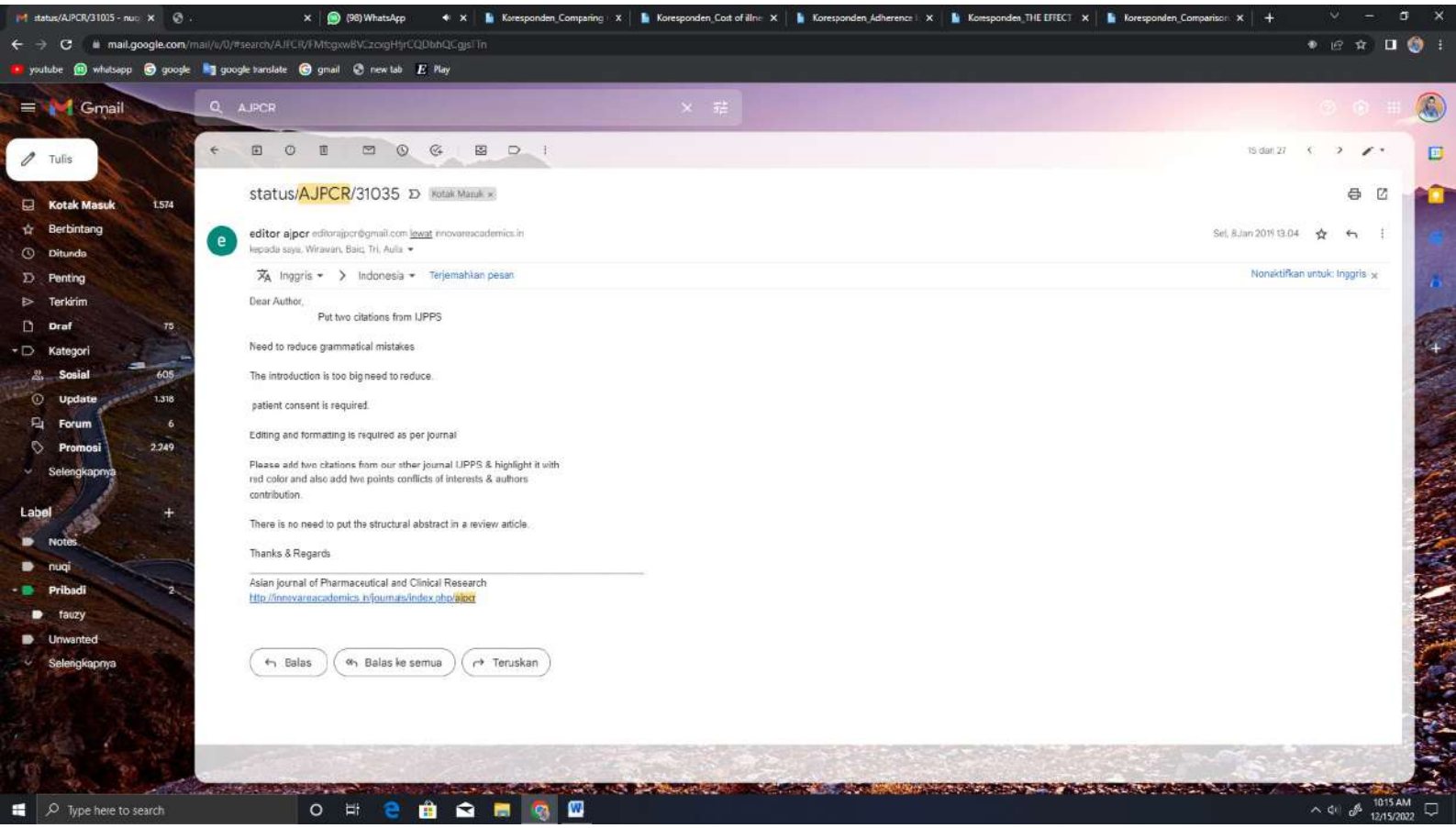
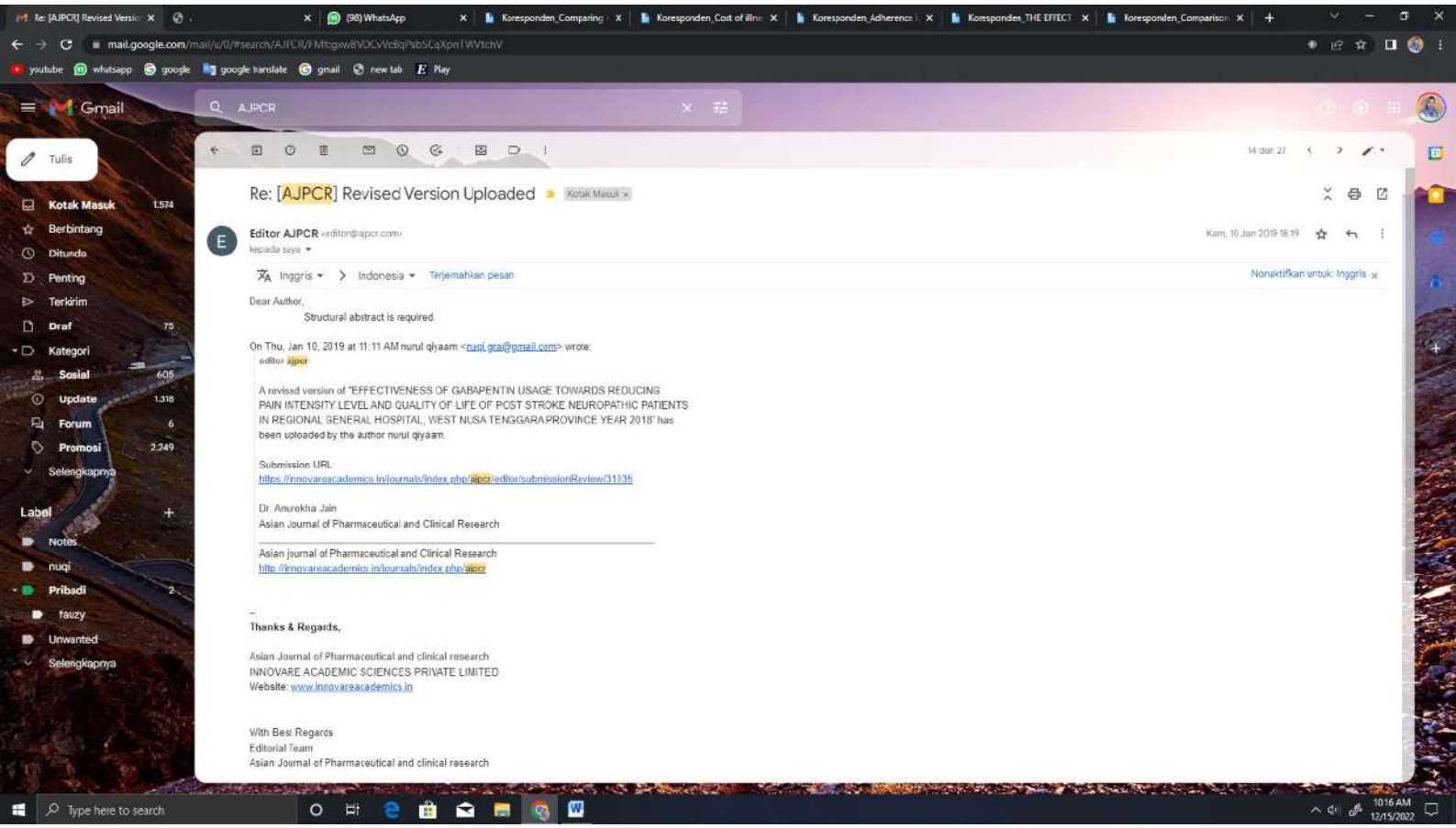
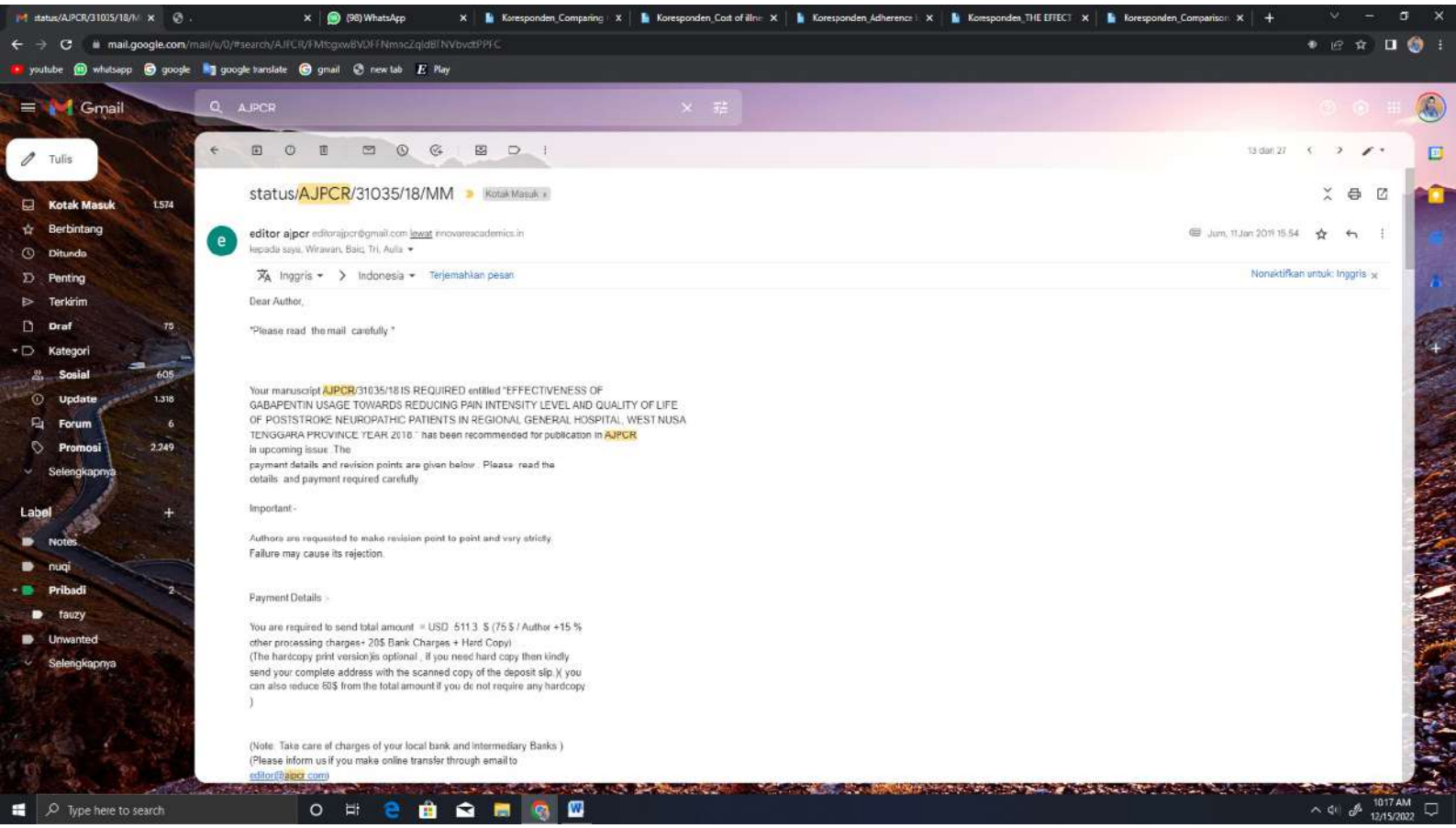
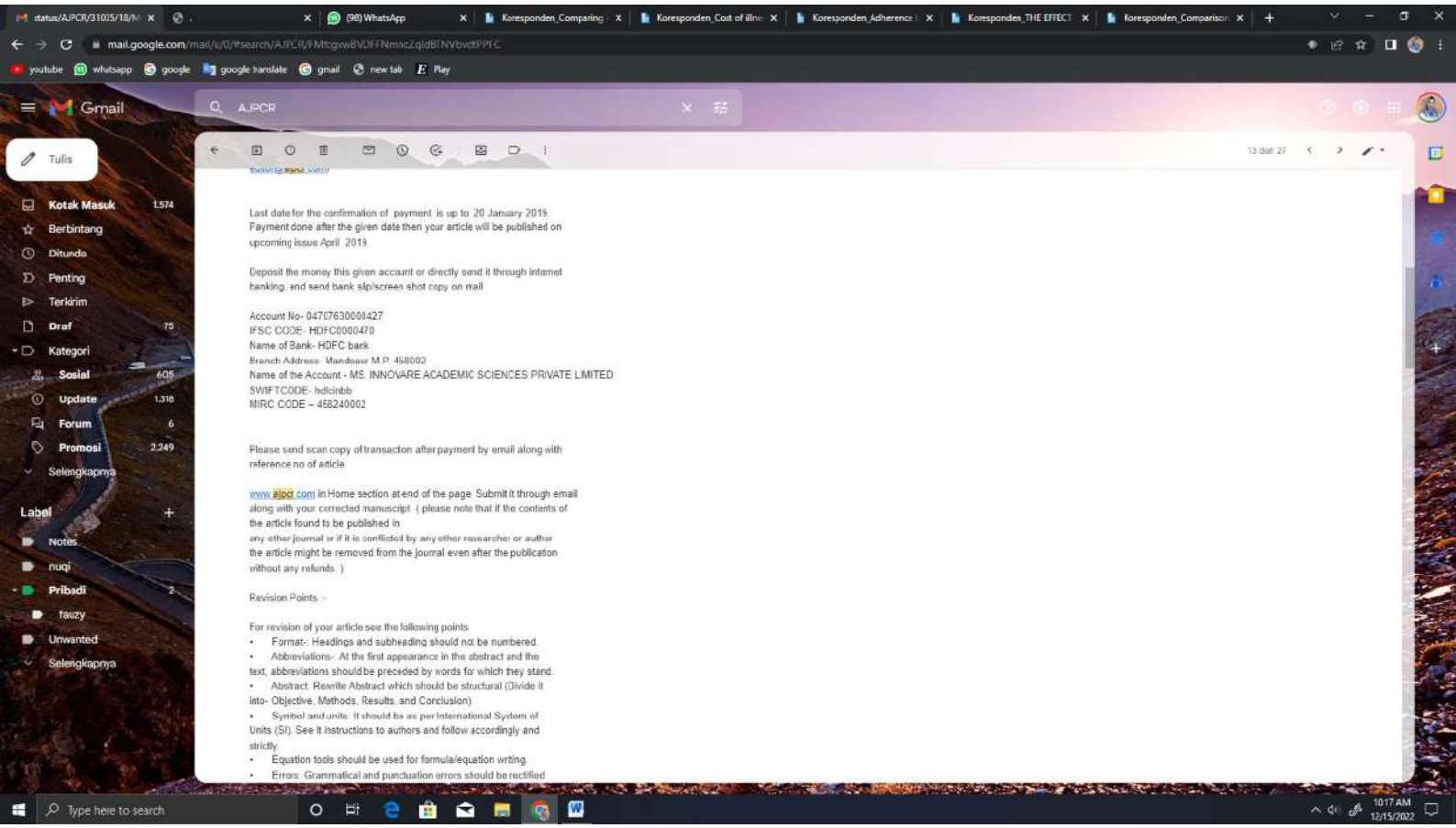

[AJPCR] Journal Registration
Dr. Anurekha Jain
nurul qiyaam
You have now been registered as a user with Asian Journal of Pharmaceutical and Clinical Research. We have included your username and password in this email, which are needed for all work with this journal through its website.
At any point, you can ask to be removed from the journal's list of users by contacting me.
Username: nuqi84
Password: nurulqiyaam
Thank you.
Dr. Anurekha Jain
Asian journal of Pharmaceutical and Clinical Research
http://innovareacademics.in/journals/index.php/ajpcr
Balas
Teruskan

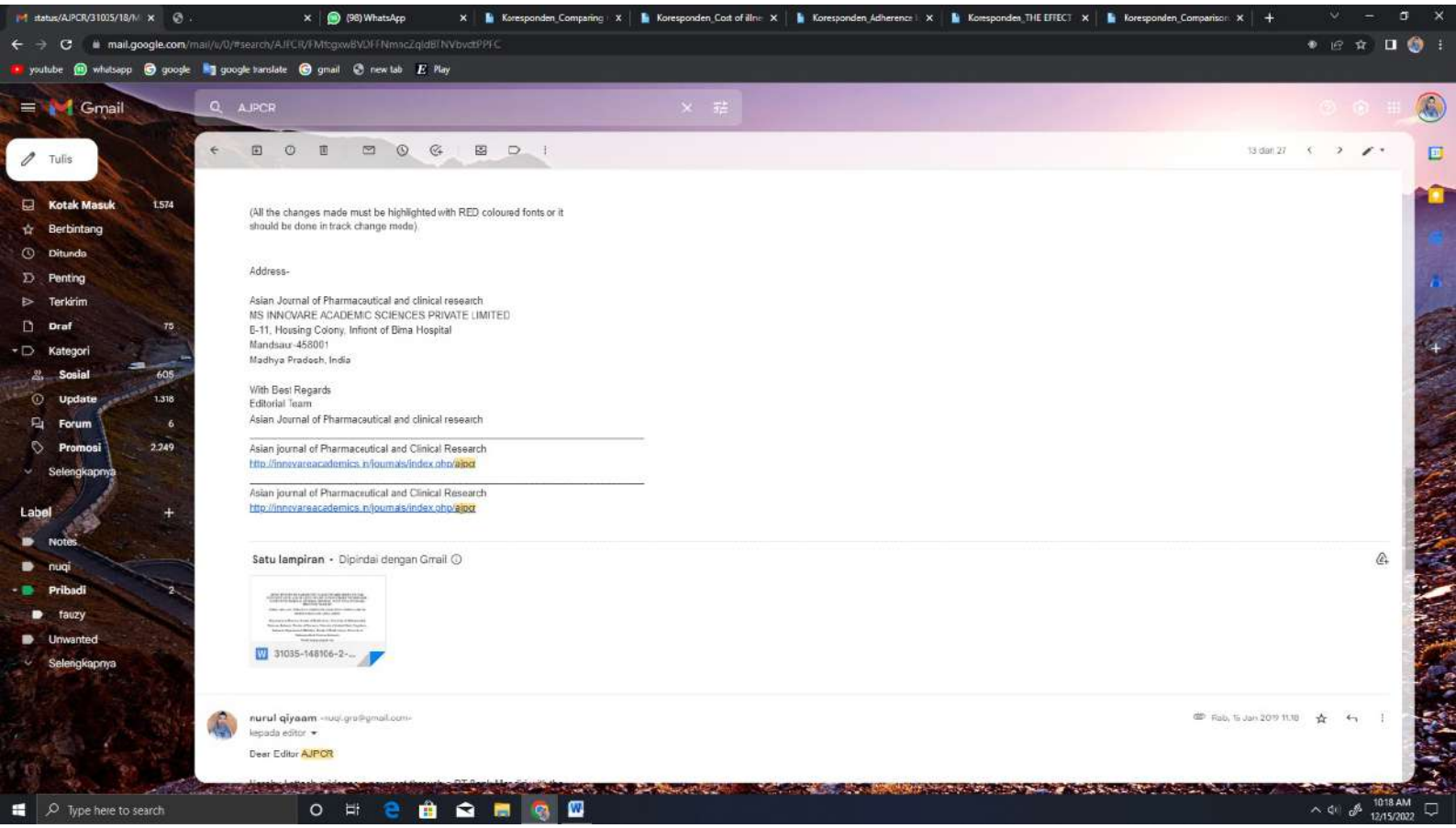

[AJPCR] 31035 - nuqi.gra
(97) WhatsApp
Koresponden_Comparing
Koresponden_Cost of illne
Koresponden_Adherence
Koresponden_THE EFFECT
Koresponden_Comparison
mail.google.com/mail/u/0/#search/AJPCR/FMfcgxvzLrQQzKPjPjPGkLqfbBhLhV8zk
youtube
whatsapp
google
google translate
gmail
new tab
Play
Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
17 dari 27
[AJPCR] 31035
Kotak Masuk
editor ajpcr editorajpcr@gmail.com lewat innovareacademics.in
kepada saya, Wiravan, Baiq, Tri, Aulia
Rab, 5 Des 2018 14.46
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear author,
we have received your manuscript. Your paper is under review. We will tell you the decision as soon as we receive the comment from the reviewer within 30 days
Thanks & regards
Asian journal of Pharmaceutical and Clinical Research
http://innovareacademics.in/journals/index.php/ajpcr
Balas
Balas ke semua
Teruskan
Type here to search
10:14 AM
12/15/2022

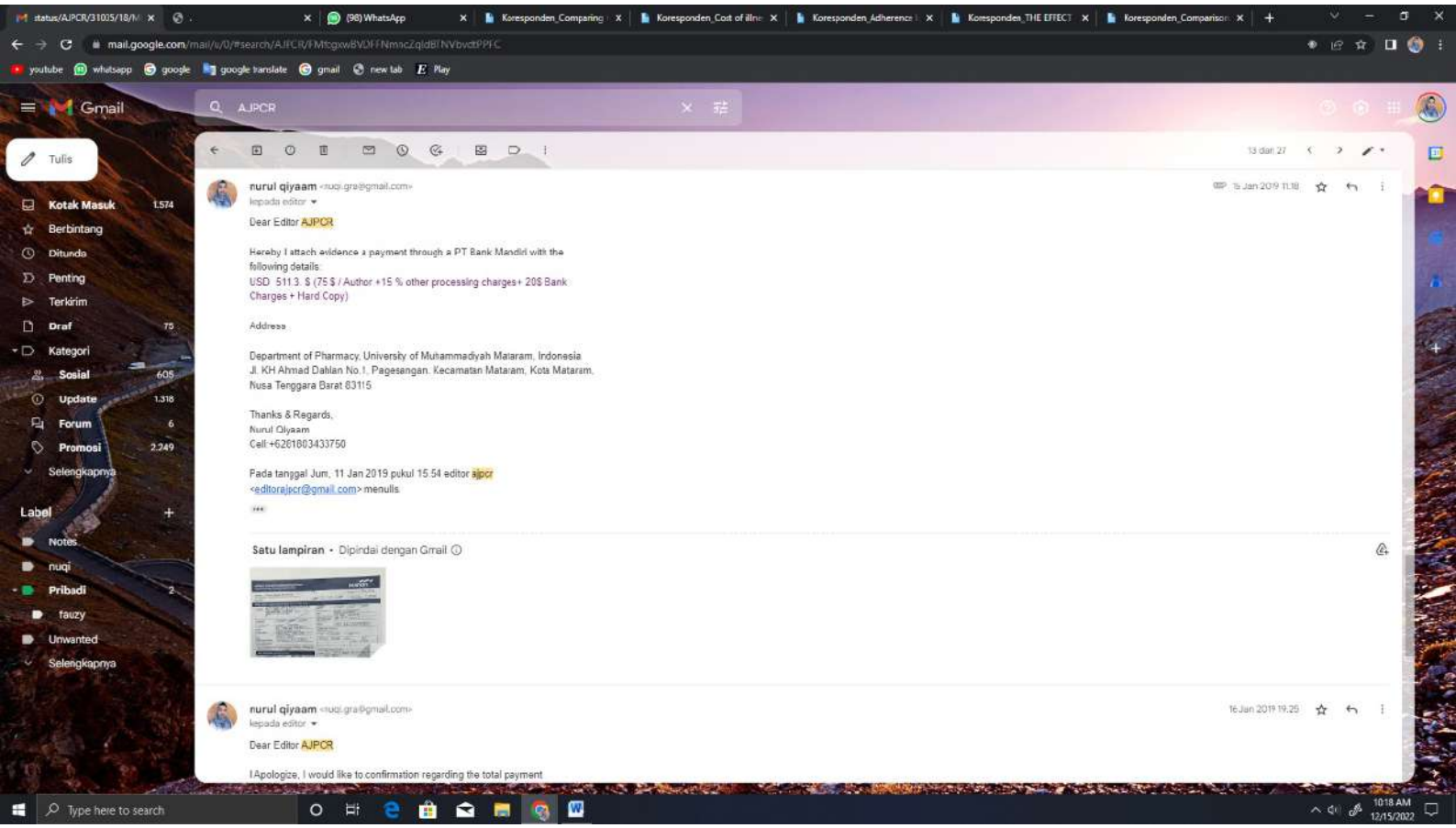

AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
status/AJPCR/31035
Kotak Masuk
editor ajpcr editorajpcr@gmail.com lewat innovareacademics.in
kepada saya, Wirawan, Baiq, Tri, Aulia
Sel, 8 Jan 2019 13.04
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author,
Put two citations from IJPPS
Need to reduce grammatical mistakes
The introduction is too big need to reduce.
patient consent is required.
Editing and formatting is required as per journal
Please add two citations from our other journal IJPPS & highlight it with red color and also add two points conflicts of interests & authors contribution.
There is no need to put the structural abstract in a review article.
Thanks & Regards
Asian journal of Pharmaceutical and Clinical Research
Http://innovareacademics.in/journals/index.php/ajpcr
Balas
Balas ke semua
Teruskan

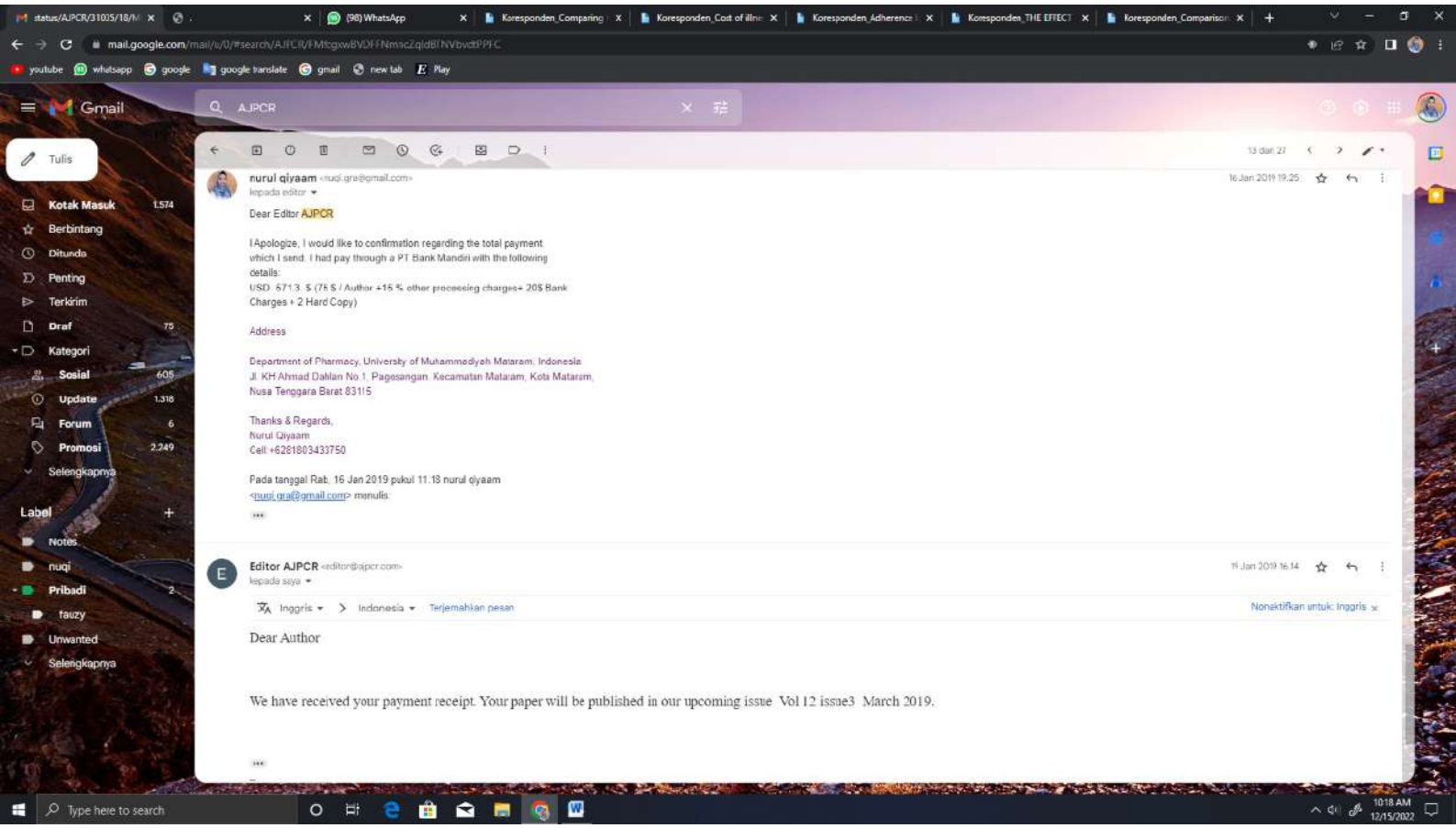

Re: [AJPCR] Revised Version Uploaded
Editor AJPCR
Dear Author,
Structural abstract is required
On Thu, Jan 10, 2019 at 11:11 AM nurul qiyaam
A revised version of "EFFECTIVENESS OF GABAPENTIN USAGE TOWARDS REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POST STROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018" has been uploaded by the author nurul qiyaam.
Submission URL:
https://innovareacademics.in/journals/index.php/ajpcr/editor/submissionReview/31035
Dr. Anurekha Jain
Asian Journal of Pharmaceutical and Clinical Research
Asian journal of Pharmaceutical and Clinical Research
http://innovareacademics.in/journals/index.php/ajpcr
Thanks & Regards,
Asian Journal of Pharmaceutical and clinical research
INNOVARE ACADEMIC SCIENCES PRIVATE LIMITED
Website: www.innovareacademics.in
With Best Regards
Editorial Team
Asian Journal of Pharmaceutical and clinical research

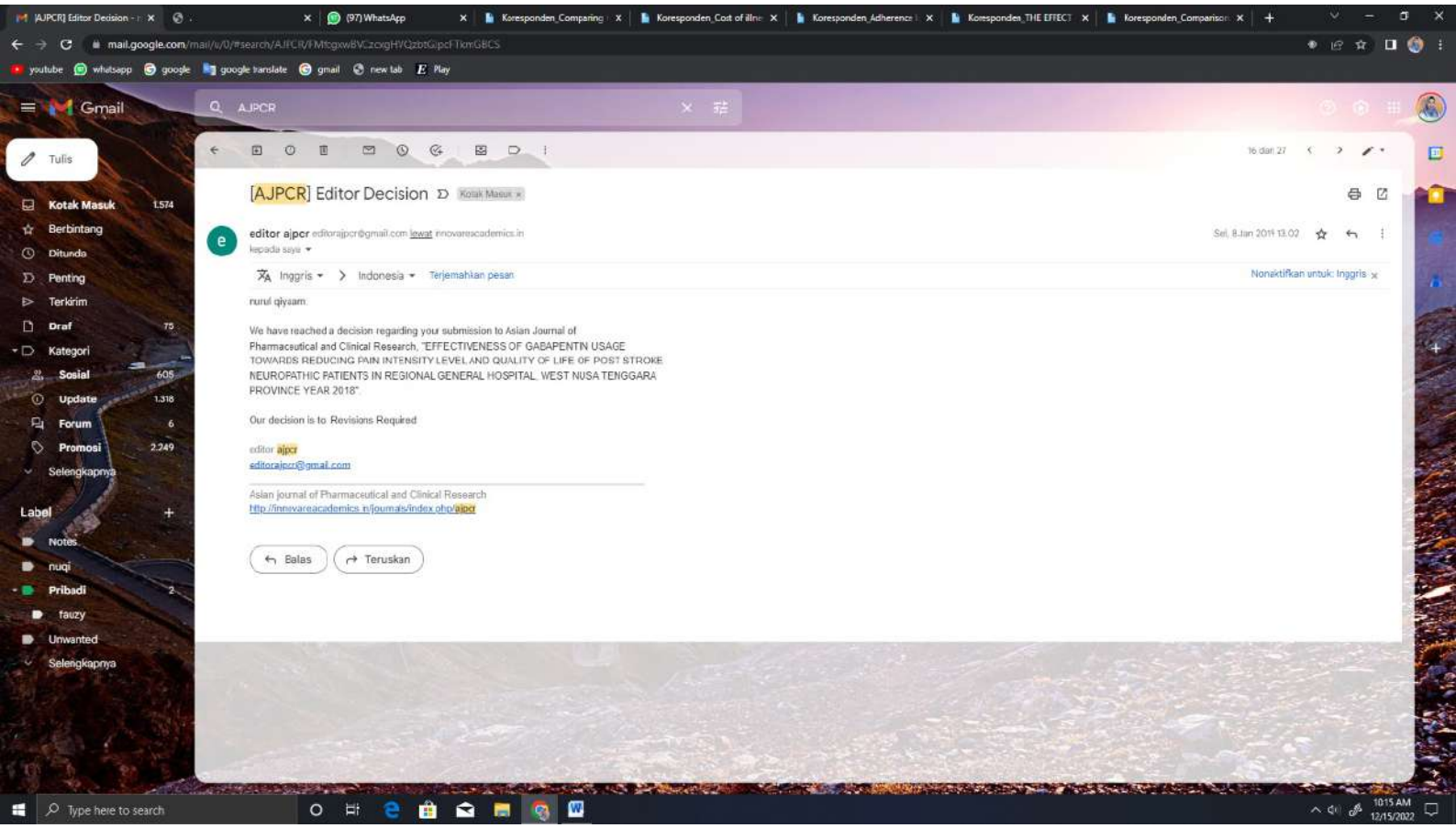

Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
13 dari 27
status/AJPCR/31035/18/MM
Kotak Masuk
editor ajpcr editorajpcr@gmail.com lewat innovareacademics.in
kepada saya, Wiravan, Baiq, Tri, Aulia
Jum, 11 Jan 2019 15.54
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author,
"Please read the mail carefully."
Your manuscript AJPCR/31035/18 IS REQUIRED entitled "EFFECTIVENESS OF GABAPENTIN USAGE TOWARDS REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POSTSTROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018." has been recommended for publication in AJPCR in upcoming issue. The payment details and revision points are given below. Please read the details and payment required carefully.
Important -
Authors are requested to make revision point to point and very strictly. Failure may cause its rejection.
Payment Details -
You are required to send total amount = USD 511.3 $ (75 $ / Author +15 % other processing charges+ 20$ Bank Charges + Hard Copy) (The hardcopy print version)is optional , if you need hard copy then kindly send your complete address with the scanned copy of the deposit slip.)(you can also reduce 60$ from the total amount if you do not require any hardcopy)
(Note: Take care of charges of your local bank and intermediary Banks)
(Please inform us if you make online transfer through email to editor@ajpcr.com)
Type here to search
10:17 AM
12/15/2022

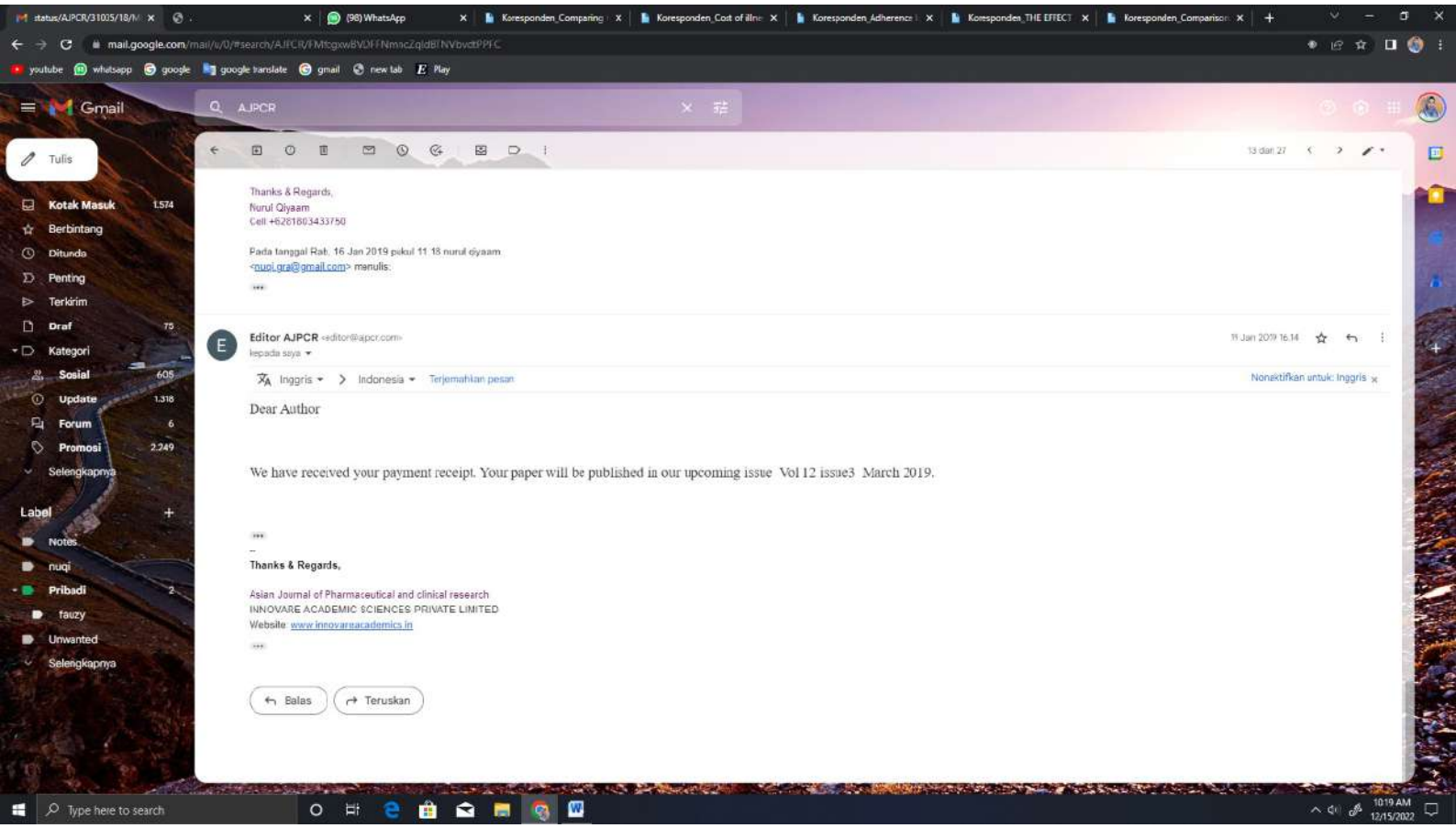

Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
13 dari 27
Last date for the confirmation of payment is up to 20 January 2019.
Payment done after the given date then your article will be published on upcoming issue April 2019.
Deposit the money this given account or directly send it through internet banking, and send bank slip/screen shot copy on mail
Account No- 047076300004427
IFSC CODE- HDFC0000470
Name of Bank- HDFC bank
Branch Address- Mandsaur M.P. 458002
Name of the Account - MS. INNOVARE ACADEMIC SCIENCES PRIVATE LIMITED
SWIFTCODE- hdfcinbb
MIRC CODE – 458240002
Please send scan copy of transaction after payment by email along with reference no of article
www.ajpcr.com in Home section at end of the page Submit it through email along with your corrected manuscript (please note that if the contents of the article found to be published in
any other journal or if it is conflicted by any other researcher or author the article might be removed from the journal even after the publication without any refunds.)
Revision Points :-
For revision of your article see the following points
• Format-: Headings and subheading should not be numbered.
• Abbreviations- At the first appearance in the abstract and the text, abbreviations should be preceded by words for which they stand.
• Abstract: Rewrite Abstract which should be structural (Divide it into- Objective, Methods, Results, and Conclusion)
• Symbol and units: It should be as per International System of Units (SI). See it Instructions to authors and follow accordingly and strictly.
• Equation tools should be used for formula/equation writing.
• Errors: Grammatical and punctuation errors should be rectified
Type here to search
10:17 AM
12/15/2022

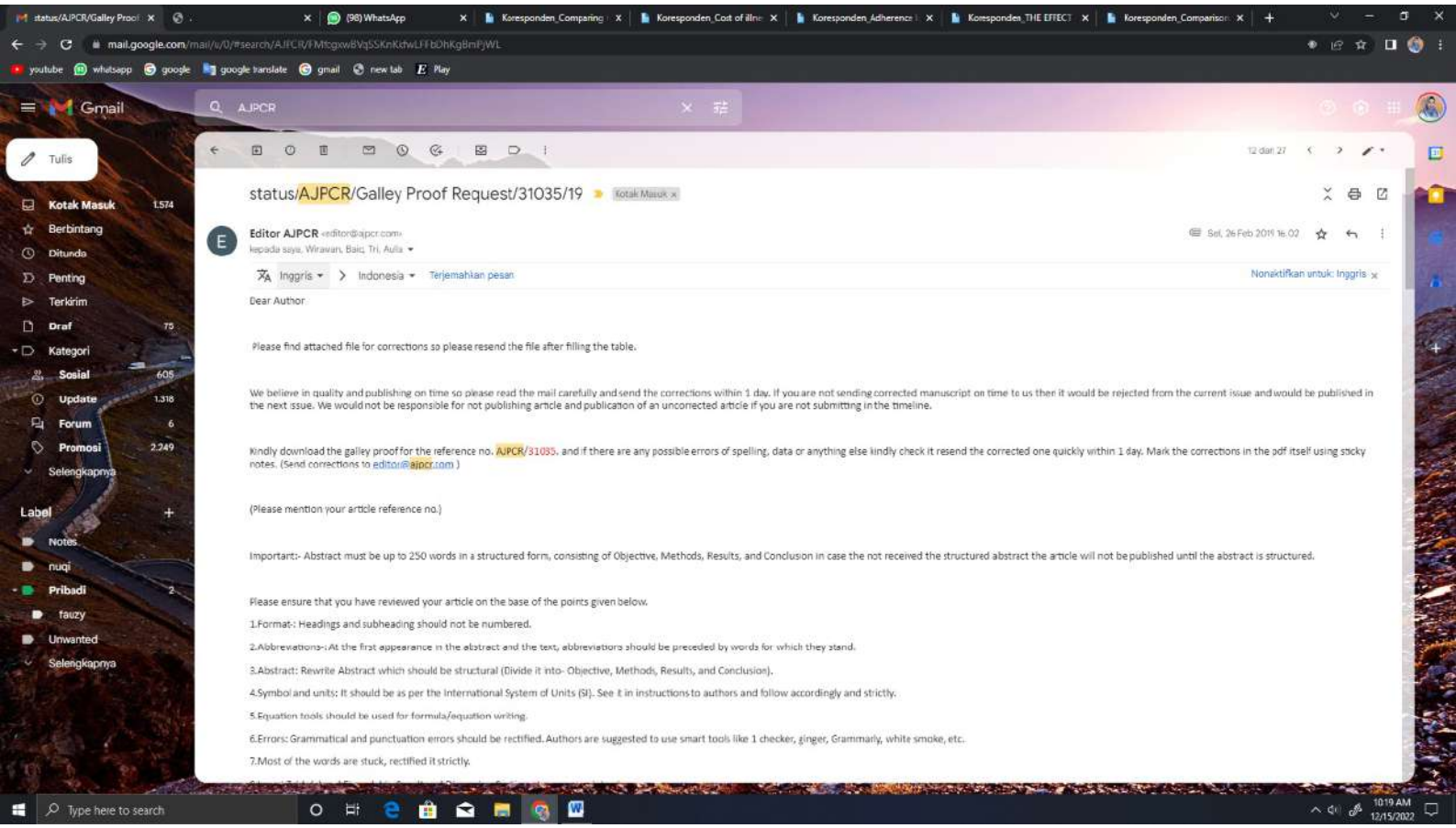

AJPCR
(All the changes made must be highlighted with RED coloured fonts or it should be done in track change mode).
Address-
Asian Journal of Pharmacautical and clinical research
MS INNOVARE ACADEMIC SCIENCES PRIVATE LIMITED
E-11, Housing Colony, Infront of Bima Hospital
Mandsaur-458001
Madhya Pradesh, India
With Best Regards
Editorial Team
Asian Journal of Pharmacautical and clinical research
Asian journal of Pharmaceutical and Clinical Research
http://innovareacademics.in/journals/index.php/ajpcr
Asian journal of Pharmaceutical and Clinical Research
http://innovareacademics.in/journals/index.php/ajpcr
Satu lampiran • Dipindai dengan Gmail
nurul qiyaam
kepada editor
Dear Editor AJPCR

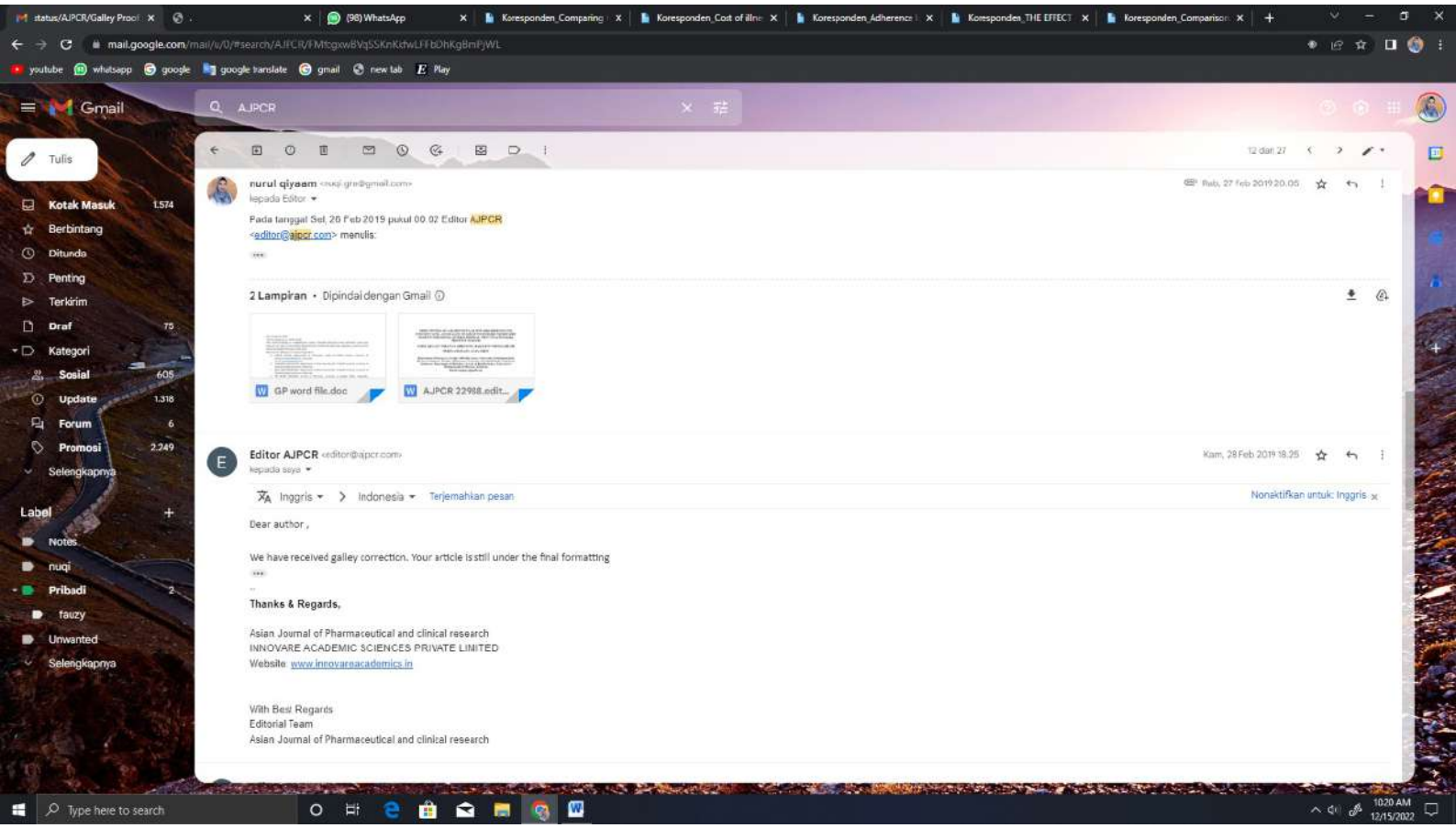

Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
13 dari 27
nurul qiyaam <nuqi.gra@gmail.com>
kepada editor
Dear Editor AJPCR
Hereby I attach evidence a payment through a PT Bank Mandiri with the following details:
USD 511.3. $ (75 $ / Author +15 % other processing charges+ 20$ Bank Charges + Hard Copy)
Address
Department of Pharmacy, University of Muhammadiyah Mataram, Indonesia
Jl. KH Ahmad Dahlan No.1, Pagesangan, Kecamatan Mataram, Kota Mataram, Nusa Tenggara Barat 83115
Thanks & Regards,
Nurul Qiyaam
Cell:+6281803433750
Pada tanggal Jum, 11 Jan 2019 pukul 15.54 editor ajpcr <editorajpcr@gmail.com> menulis
Satu lampiran • Dipindai dengan Gmail
nurul qiyaam <nuqi.gra@gmail.com>
kepada editor
16 Jan 2019 19.25
Dear Editor AJPCR
I Apologize, I would like to confirmation regarding the total payment
Type here to search
10:18 AM
12/15/2022

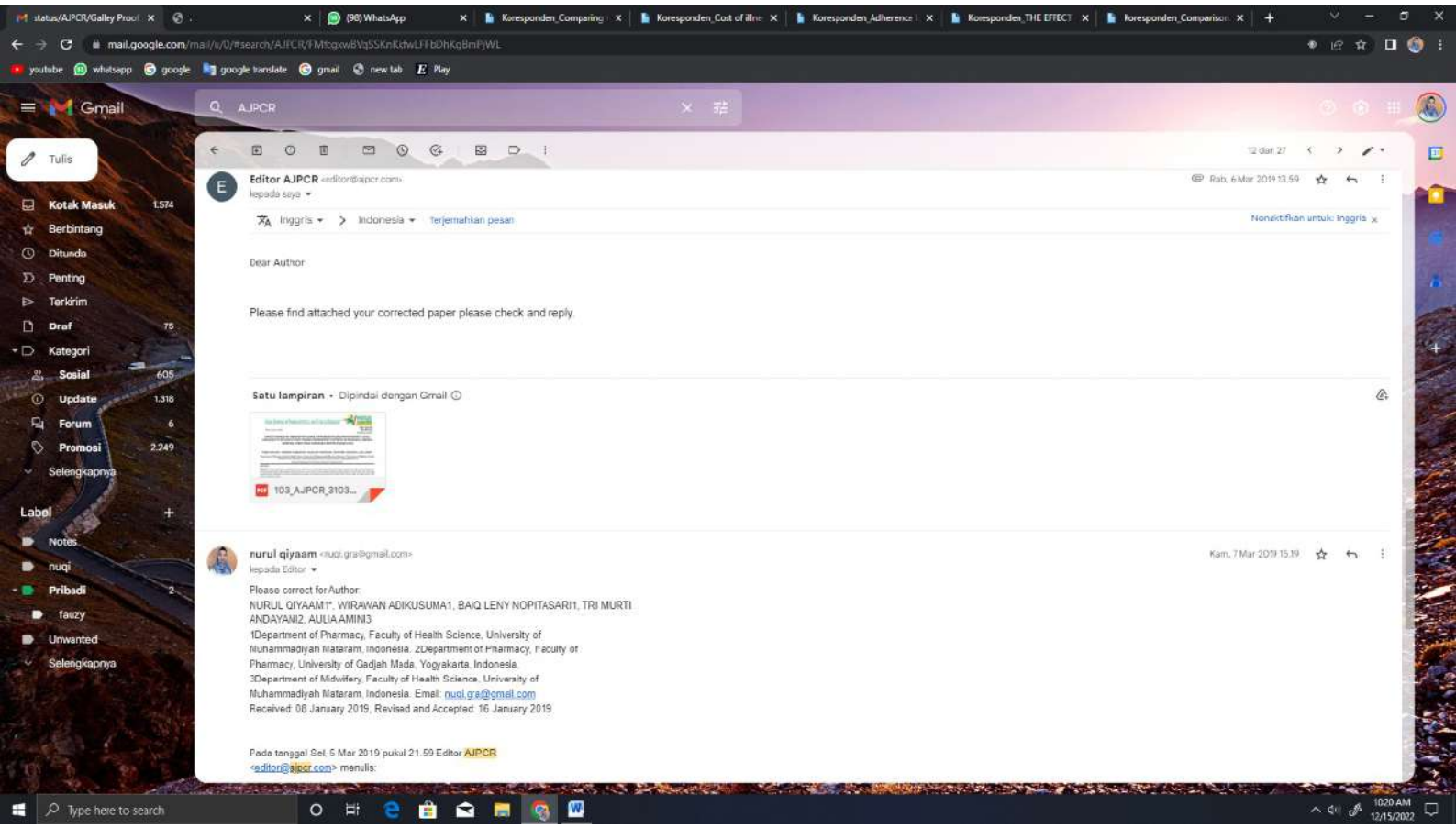

AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
nurul qiyaam <nuqi.gra@gmail.com>
kepada editor
16 Jan 2019 19.25
Dear Editor AJPCR
I Apologize, I would like to confirmation regarding the total payment which I send. I had pay through a PT Bank Mandiri with the following details:
USD 671.3 $ (75 $ / Author +15 % other processing charges+ 20$ Bank Charges + 2 Hard Copy)
Address
Department of Pharmacy, University of Muhammadiyah Mataram, Indonesia
Jl. KH Ahmad Dahlan No.1, Pagesangan, Kecamatan Mataram, Kota Mataram, Nusa Tenggara Barat 83115
Thanks & Regards,
Nurul Qiyaam
Cell: +6281803433750
Pada tanggal Rab, 16 Jan 2019 pukul 11.18 nurul qiyaam <nuqi.gra@gmail.com> menulis:
Editor AJPCR <editor@ajpcr.com>
kepada saya
19 Jan 2019 16.14
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author
We have received your payment receipt. Your paper will be published in our upcoming issue Vol 12 issue3 March 2019.

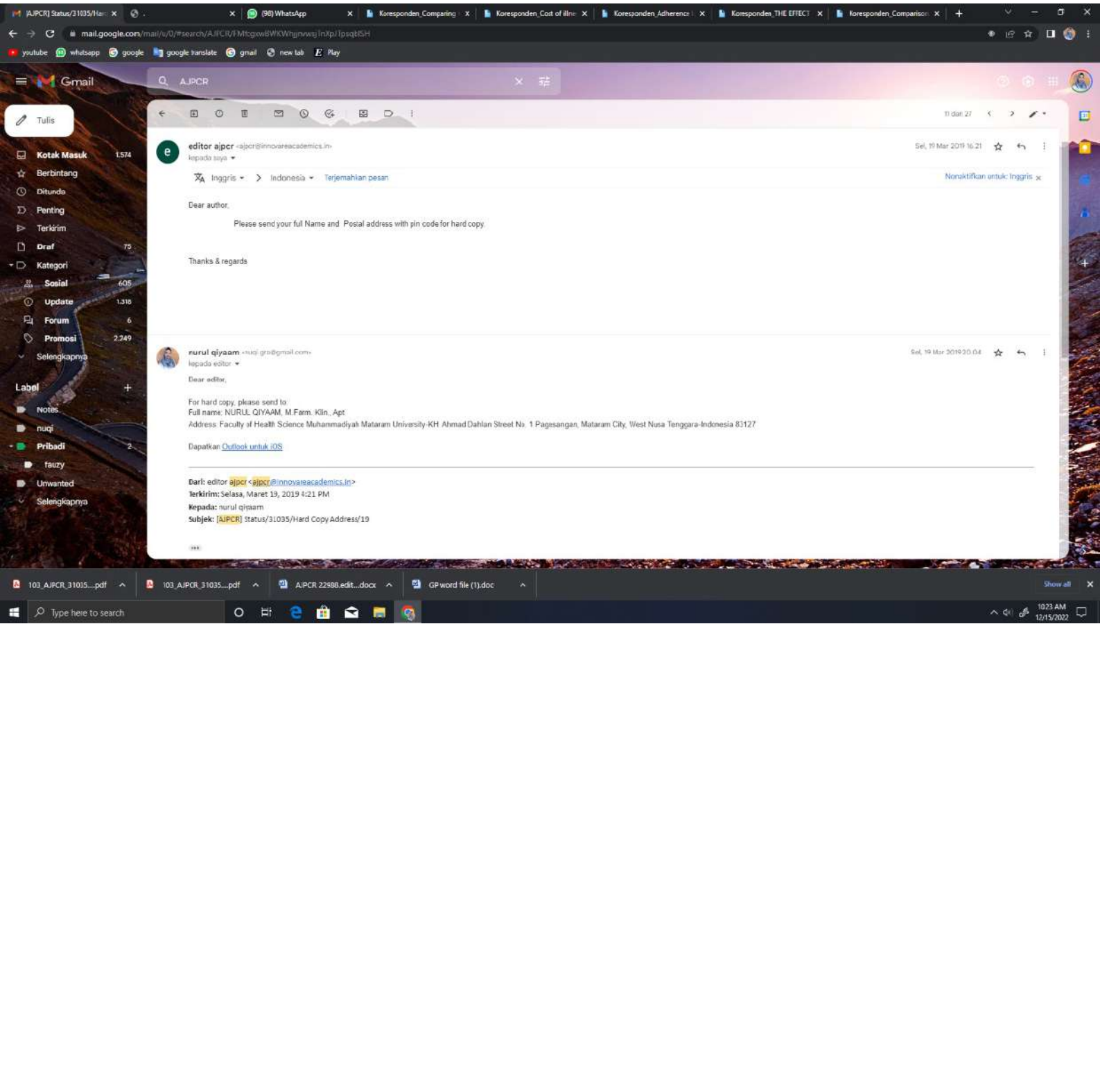

[AJPCR] Editor Decision
editor ajpcr editorajpcr@gmail.com lewat innovareacademics.in
kepada saya
Sel, 8 Jan 2019 13.02
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
nurul qiyaam
We have reached a decision regarding your submission to Asian Journal of Pharmaceutical and Clinical Research, "EFFECTIVENESS OF GABAPENTIN USAGE TOWARDS REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POST STROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018".
Our decision is to: Revisions Required
editor ajpcr
editorajpcr@gmail.com
Asian journal of Pharmaceutical and Clinical Research
http://innovareacademics.in/journals/index.php/ajpcr
Balas
Teruskan

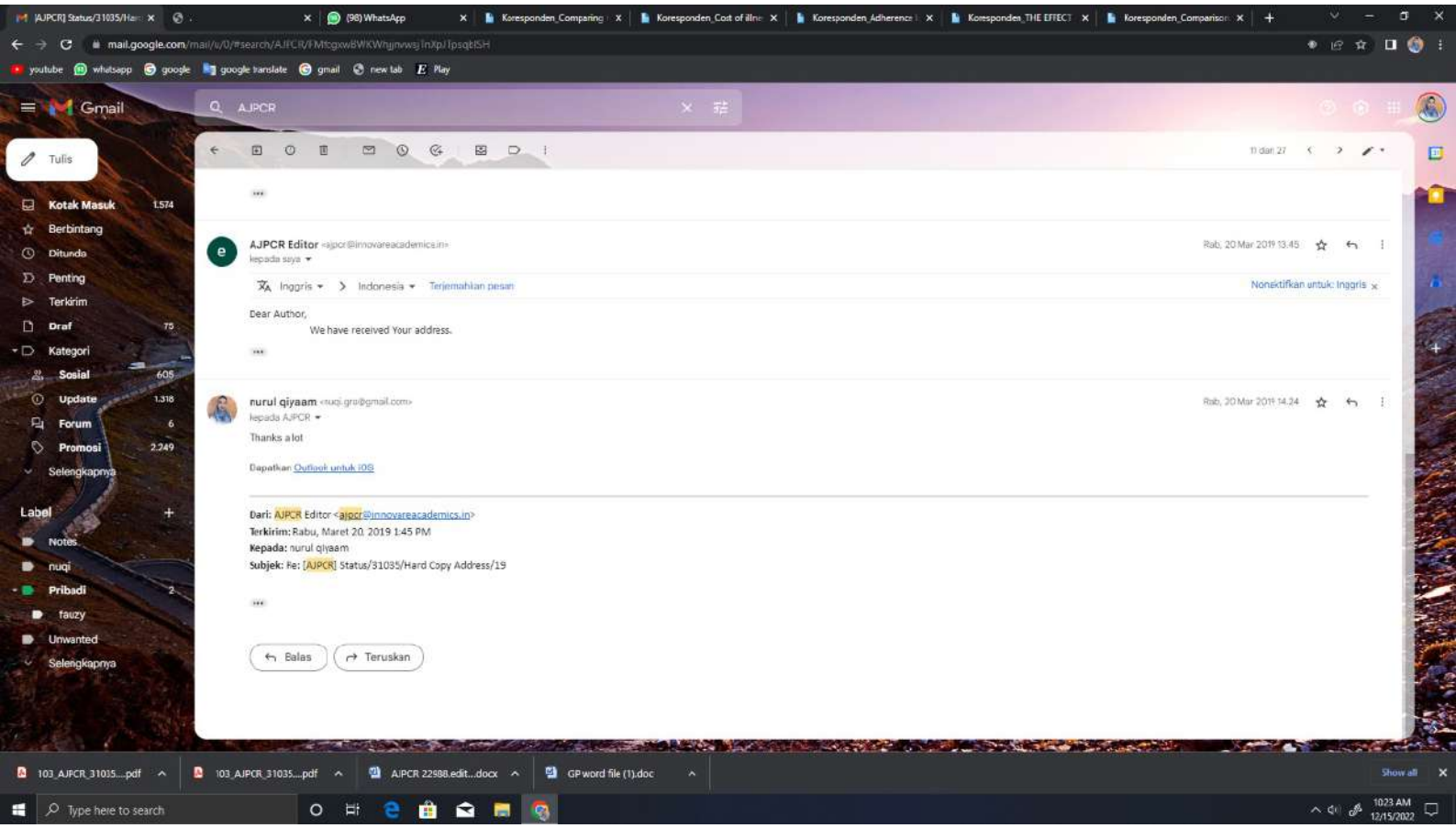

Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
13 dari 27
Thanks & Regards,
Nurul Qiyaam
Cell: +6281803433750
Pada tanggal Rab, 16 Jan 2019 pukul 11.18 nurul qiyaam
<nuqi.qra@gmail.com> menulis:
Editor AJPCR <editor@ajpcr.com>
kepada saya
11 Jan 2019 16.14
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author
We have received your payment receipt. Your paper will be published in our upcoming issue Vol 12 issue3 March 2019.
Thanks & Regards,
Asian Journal of Pharmaceutical and clinical research
INNOVARE ACADEMIC SCIENCES PRIVATE LIMITED
Website: www.innovareacademics.in
Balas
Teruskan
Type here to search
10:19 AM
12/15/2022

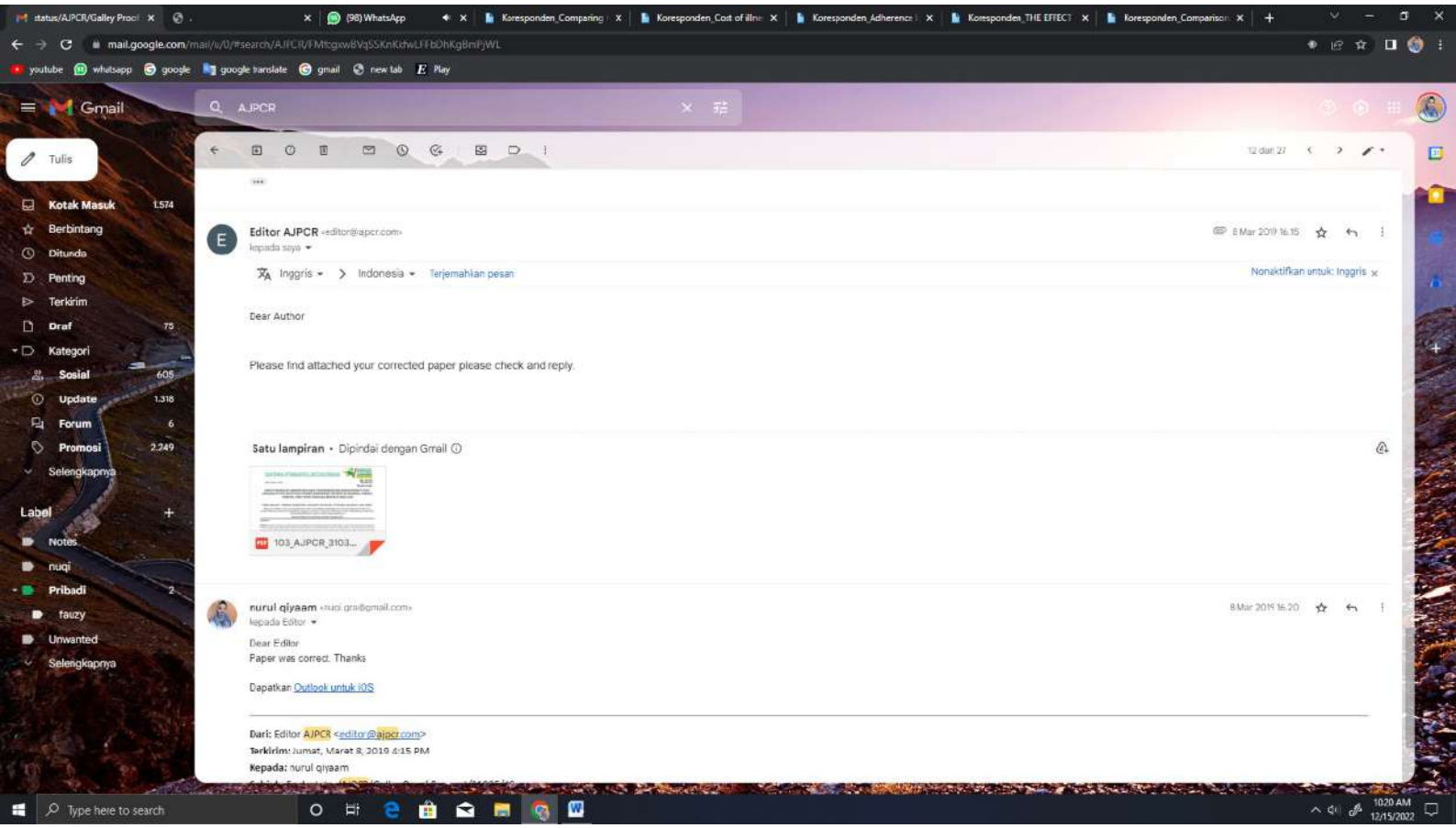

status/AJPCR/Galley Proof Request/31035/19
Editor AJPCR
Dear Author
Please find attached file for corrections so please resend the file after filling the table.
We believe in quality and publishing on time so please read the mail carefully and send the corrections within 1 day. If you are not sending corrected manuscript on time to us then it would be rejected from the current issue and would be published in the next issue. We would not be responsible for not publishing article and publication of an uncorrected article if you are not submitting in the timeline.
Kindly download the galley proof for the reference no. AJPCR/31035. and if there are any possible errors of spelling, data or anything else kindly check it resend the corrected one quickly within 1 day. Mark the corrections in the pdf itself using sticky notes. (Send corrections to editor@ajpcr.com)
(Please mention your article reference no.)
Important:- Abstract must be up to 250 words in a structured form, consisting of Objective, Methods, Results, and Conclusion in case the not received the structured abstract the article will not be published until the abstract is structured.
Please ensure that you have reviewed your article on the base of the points given below.
1.Format-: Headings and subheading should not be numbered.
2.Abbreviations-:At the first appearance in the abstract and the text, abbreviations should be preceded by words for which they stand.
3.Abstract: Rewrite Abstract which should be structural (Divide it into- Objective, Methods, Results, and Conclusion).
4.Symbol and units: It should be as per the International System of Units (SI). See it in instructions to authors and follow accordingly and strictly.
5.Equation tools should be used for formula/equation writing.
6.Errors: Grammatical and punctuation errors should be rectified. Authors are suggested to use smart tools like 1 checker, ginger, Grammarly, white smoke, etc.
7.Most of the words are stuck, rectified it strictly.


Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
12 dari 27
nurul qiyaam
kepada Editor
Pada tanggal Sel, 26 Feb 2019 pukul 00.02 Editor AJPCR
<editor@ajpcr.com> menulis:
2 Lampiran • Dipindai dengan Gmail
GP word file.doc
AJPCR 22988.edit...
Editor AJPCR
kepada saya
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear author ,
We have received galley correction. Your article is still under the final formatting
Thanks & Regards,
Asian Journal of Pharmaceutical and clinical research
INNOVARE ACADEMIC SCIENCES PRIVATE LIMITED
Website www.innovareacademics.in
With Best Regards
Editorial Team
Asian Journal of Pharmaceutical and clinical research
Type here to search
10:20 AM
12/15/2022


AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
Editor AJPCR <editor@ajpcr.com>
kepada saya
Rab, 6 Mar 2019 13.59
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author
Please find attached your corrected paper please check and reply.
Satu lampiran • Dipindai dengan Gmail
103_AJPCR_3103...
nurul qiyaam <nuqi.gra@gmail.com>
kepada Editor
Kam, 7 Mar 2019 15.19
Please correct for Author:
NURUL QIYAAM1*, WIRAWAN ADIKUSUMA1, BAIQ LENY NOPITASARI1, TRI MURTI ANDAYANI2, AULIA AMINI3
1Department of Pharmacy, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. 2Department of Pharmacy, Faculty of Pharmacy, University of Gadjah Mada, Yogyakarta, Indonesia.
3Department of Midwifery, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. Email: nuqi.gra@gmail.com
Received: 08 January 2019, Revised and Accepted: 16 January 2019
Pada tanggal Sel, 5 Mar 2019 pukul 21.59 Editor AJPCR <editor@ajpcr.com> menulis:
Type here to search
10:20 AM
12/15/2022


[AJPCR] Status/31035/Hard
(98) WhatsApp
Koresponden_Comparing
Koresponden_Cost of illne
Koresponden_Adherence
Koresponden_THE EFFECT
Koresponden_Comparison
mail.google.com/mail/u/0/#search/AJPCR/FMfcgxwBWKWhjnvwsjlnXpJfpsqbtSH
youtube
whatsapp
google
google translate
gmail
new tab
Play
Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
11 dari 27
editor ajpcr <ajpcr@innovareacademics.in>
kepada saya
Sel, 19 Mar 2019 16.21
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear author,
Please send your full Name and Posal address with pin code for hard copy.
Thanks & regards
nurul qiyaam <nuqi.gra@gmail.com>
kepada editor
Sel, 19 Mar 2019 20.04
Dear editor,
For hard copy, please send to:
Full name: NURUL QIYAAM, M.Farm. Klin., Apt
Address: Faculty of Health Science Muhammadiyah Mataram University-KH. Ahmad Dahlan Street No. 1 Pagesangan, Mataram City, West Nusa Tenggara-Indonesia 83127
Dapatkan Outlook untuk iOS
Dari: editor ajpcr <ajpcr@innovareacademics.in>
Terkirim: Selasa, Maret 19, 2019 4:21 PM
Kepada: nurul qiyaam
Subjek: [AJPCR] Status/31035/Hard Copy Address/19
103_AJPCR_31035....pdf
103_AJPCR_31035....pdf
AJPCR 22588.edit...docx
GP word file (1).doc
Show all
Type here to search
10:23 AM
12/15/2022


Gmail
AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
AJPCR Editor <ajpcr@innovareacademics.in>
kepada saya
Rab, 20 Mar 2019 13.45
Inggris Indonesia Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author,
We have received Your address.
nurul qiyaam <nuqi.gra@gmail.com>
kepada AJPCR
Rab, 20 Mar 2019 14.24
Thanks a lot
Dapatkan Outlook untuk iOS
Dari: AJPCR Editor <ajpcr@innovareacademics.in>
Terkirim: Rabu, Maret 20, 2019 1:45 PM
Kepada: nurul qiyaam
Subjek: Re: [AJPCR] Status/31035/Hard Copy Address/19
Balas
Teruskan


AJPCR
Tulis
Kotak Masuk 1.574
Berbintang
Ditunda
Penting
Terkirim
Draf 75
Kategori
Sosial 605
Update 1.318
Forum 6
Promosi 2.249
Selengkapnya
Label
Notes
nuqi
Pribadi 2
fauzy
Unwanted
Selengkapnya
12 dari 27
Editor AJPCR <editor@ajpcr.com>
kepada saya
8 Mar 2019 16.15
Inggris
Indonesia
Terjemahkan pesan
Nonaktifkan untuk: Inggris
Dear Author
Please find attached your corrected paper please check and reply.
Satu lampiran • Dipindai dengan Gmail
103_AJPCR_3103...
nurul qiyaam <nuqi.gra@gmail.com>
kepada Editor
8 Mar 2019 16.20
Dear Editor
Paper was correct. Thanks
Dapatkan Outlook untuk iOS
Dari: Editor AJPCR <editor@ajpcr.com>
Terkirim: Jumat, Maret 8, 2019 4:15 PM
Kepada: nurul qiyaam
Type here to search
10:20 AM
12/15/2022

Vol..... issue .....
Article reference no.....
Title.....
Name & mail address of corresponding author .....

Highlighted Corrections

S.No.	Asked query no.	Details
1	AQ1	Required details should be given in this column
2	AQ2	Required details should be given in this colum

Other corrections

Page No.	Column(left or right)/Section /Paragraph/line no or talbe or figure	Incorrect text or matter	Corrected text

(Please mention clearly your article reference no.)
Editorial team
AJPCR
INNOVARE ACADEMIC SCIENCES

EFFECTIVENESS OF GABAPENTIN USAGE TOWARDS REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POSTSTROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018

NURUL QIYAAM[1], WIRAWAN ADIKUSUMA[1], BAIQ LENY NOPITASARI[1], TRI MURTI ANDAYANI[2], AULIA AMINI[1]

[1]Department of Pharmacy, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. [2]Faculty of Pharmacy, University of Gadjah Mada, Yogyakarta, Indonesia. [1]Department of Midwifery, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia
Email: nuqi.gra@gmail.com

ABSTRACT

Objective: Stroke is defined as a sudden loss of brain function due to blockade/rupture of the brain's blood vessels. Data collected by the Indonesian Stroke Foundation shows that Indonesia ranks first in Asia as the country with the highest number of stroke sufferers. The purpose of this study was to Determine the effectiveness of the use of gabapentin to reduce pain intensity and improve the quality of life of post-stroke neuropathic pain in NTB Province Hospital Patients.

Methods: Methods: This study was carried out in the period of June–July 2018. The population was all post-stroke neuropathic patients who received gabapentin therapy in regional general hospital, West Nusa Tenggara Province. Affordable Populations are post-stroke neuropathic pain Patients who seek outpatient treatment that meet the inclusion and exclusion criteria. The results of the data will be analyzed using paired sample t-test. Obtained 15 patients were willing to participate in this study.

Result: The results of the study using questionnaire EQ-5D-3L after using gabapentin for 2 weeks Patients experienced an improvement in the quality of life in each dimension items, namely the ability to walk / move from 6.7%, no problem to 60%, no self -care, 26.7% no problem to be 80% without problems, usual activities carried out from 13.3% had no problems to 46.7% had no problems, feeling of pain /discomfort from 60% having moderate problems to 60% had no problems, anxiety/depression of 60% had no problem being 100% has no problem. While the measurement of quality of life using the EQ-VAS questionnaire there was a significant improvement in the quality of life between before and after using gabapentin at 32.66.

Conclusion: use of gabapentin has effectiveness on reduction of pain intensity and quality of life of poststroke neuropathic patients in regional general hospital, West Nusa Tenggara Province year 2018.

Keywords: Neuropathy, post-stroke, gabapentin, pain intensity, quality of life.

INTRODUCTION

Stroke is defined as a sudden loss of brain function caused by the blockage or the rupture of blood vessels of the brain[1][2]. Pathological classification stroke is ischemic stroke and hemorrhagic stroke [3]. Based on the data from the American Heart Association (AHA), stroke is the world's second-leading cause of death in the age group of over 60 years and the fifth-leading cause of death in the age group 15-59 years [4]. In the United States, it is recorded that almost every 45 seconds someone has a case of stroke, and every 4 seconds

experienced a death due to stroke [5]. Medical treatment for post-stroke pain in Indonesia had already begun using tricyclic antridepresen groups like amitriptyline and anticonvulsants groups such as gabapentin [6]. The response of patients using these two drugs is good but since 2013, both of them are no longer included in the list and price ceiling for the treatment of injury pain because of weak scientific evidence on the use of post-stroke pain so that the management of pain therapy post-stroke becomes less effective[7].

Several studies conducted a study comparing the therapeutic effects of gabapentin and amitriptyline in post-stroke with neuropathic pain. Both gabapentin and amitriptyline provided effective pain control in peripheral neuropathic pain. Additionally, gabapentin was more effective especially in paroxysmal shooting pain than other pain qualities[8]. The comparison between gabapentin and amitriptyline stated that there is no difference in the therapeutic effect of Herniated nucleus pulposus [9]. This study aims to know the effectiveness of the usage of gabapentin to decrease pain intensity and improve the patients' quality of life with neuropathic post-stroke in Poly Neurosurgery of Regional General Hospital, NTB.

MATERIAL AND METHODS

This study uses Quasy Experimental, before the patient is given informed consent to retrieve patient data prospectively using the Wong-Baker Faces Pain Rating Scale (WBFPRC) to measure the reduction in pain intensity [10] and a questionnaire Euroqol 5 Dimensions (EQ-5D) is used to measure the quality of life [11], analysis of variance and t-test were performed to analyze the mean difference in VAS and EQ-5D scores between subgroups of patients [12] and assess the health condition of the patient, comprising from (EQ-5D-3L) to measure improve the patient's quality of life [13] [14]. The research was conducted in Poly Neurosurgery of Regional General Hospital, NTB in June-July 2018.

The samples in this study were all the stroke outpatients who undergo neuropathic pain in Provincial General Hospital NTB including inclusion and exclusion criteria. The effectiveness of therapy using Wong Backer Faces Pain Rating Scale (WBFPRS) used to measure the reduction in pain intensity, EQ-5D-3L questionnaire, and EQ-VAS which is used to measure the patient's quality of life.

EQ-5D-3L questionnaire consists of five dimensions: mobility, self-care, activities, pain/discomfort and anxiety/depression and in every dimension have a level such as no problem, moderate problems, and extreme problems. Levels of perceived problems are marked with (√) in each dimension and coded 1 in column 1, column 2 is coded 2, column 3 coded 3. Description: Column 1 = No problem in mobility, self-care, activities, pain /discomfort, anxiety/depression. Column 2 = moderate problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 3 = extreme problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. EQ-VAS questionnaire (Visual Analogue Scale) is used to assess the health condition of the patient. A score of 100 is given for the best health conditions imaginable and a score of 0 for the worst health conditions that can be imagined. Questionnaires were given to patients before therapy and after 4 weeks of therapy.

RESULTS

In total, we recruited 15 study patients with post-stroke neuropathic. Demographic characteristics are summarized in Table 1. Patients age ranged from 20 – 83 years. Male accounted for 8 (53%) and education level up to senior high school 12 (80%).

Analysis of differences in pain intensity before and after Gabapentin therapy to decrease pain intensity by the help of SPSS 16.0 For Windows, where the analysis uses

Paired Sample t-Test. Results of research conducted using the Wong-Baker Faces Pain Rating Scale can be seen below in Table 2.

Table I. Baseline characteristics of participants

Characteristics		n (15)
Gender	Male	8 (53%)
	Female	7 (47%)
Education level	Up to senior high school	12 (80%)
	Undergraduate	3 (20%)
Age	<60 years	5 (33%)
	≥60 years	10 (67%)

Table 2. Pain Intensity Difference Before and After the Use of Gabapentin.

Group	Mean ± SD	Δ	P (Value)
Before	8.06 ± 1.38	4.26 ± 0.18	0,029*
After	3.80 ± 1.20		

*p<0.05, Δ: Increase adherence, the p-value of paired of sample t-test, SD: Standard deviation

Quality of life can be seen from the questionnaire respondents EQ-5D-3L. Questionnaire EQ-5D-3L has five dimensions: mobility, self-care, activities, pain/discomfort and anxiety/depression and has three levels of problems faced by patients: No problems, moderate problems, and extreme problems. Results of research conducted using the EQ-5D-3L questionnaire can be seen below in Table 3:

Table 3. Patient Response to Every Dimension of the EQ-5D-3L questionnaire.

Dimension	Before Treatment						After Treatment					
	NP		MP		EP		NP		MP		EP	
	N	%	N	%	N	%	N	%	N	%	N	%
Mobility	1	6.7	11	73.3	3	20	9	60	6	40	0	0
Self-care	4	26.7	10	66.7	1	6.7	12	80	3	20	0	0
Daily activities	2	13.3	9	60	4	26.7	7	46.7	8	53.3	0	0
Pain/discomfort	0	0	9	60	6	40	9	60	6	40	0	0
Anxiety/depression	9	60	6	40	0	0	15	100	0	0	0	0

Description: N = Number of Patients; NB = No Problem; MP = Moderate Problems; EP = Extreme Problems.

EQ-VAS questionnaire is used to assess the imaginable health condition. In this questionnaire, the best health condition imaginable is rated 100 and the worst health conditions are rated 0. The results of the research conducted using the EQ-VAS questionnaire can be seen below in Table 3:

Table 4. EQ-VAS Value Before and After the Use of Gabapentin.

Group	Mean ± SD	P value
Before	36.00 ± 12.98	0028 *
After	68.66 ± 9.90	

*p<0.05, Δ: Increase adherence, the p-value of a pair of sample t-test, SD: Standard deviation

DISCUSSION

Based on table 2, it showed a Mean ± SD result for the before data which is 8.06 ± 1.38, after data 3.80 ± 1.20, both the data have difference in results which is 4.26 ± 0.18 means that there is a decrease in pain as much as 4.26 in the treatment of gabapentin 2x300 medication for 2 weeks also strengthened by the results of a p-value < 0.05, so that there are significant differences in before and after treatment. This research may indicate that the use of gabapentin 300 mg 2 times daily for 2 weeks have effectiveness in reducing pain intensity, results from this study also strengthened with a previous study conducted where gabapentin is effective in reducing the intensity of the neuropathic post-stroke pain [6].

This is consistent with the theory that gabapentin may take effect after 1-2 weeks of usage and help reduce pain when used for at least 2-3 months [6]. Gabapentin also has the effect of which can reduce pain in patients with painful diabetic neuropathy, it is supported by previous studies that have been done using gabapentin to patients with painful diabetic neuropathy [15]. Previous studies conducted compared gabapentin with amitryptiline, where it was obtained that gabapentin amitryptiline is superior in terms of reducing pain [16].

Based on the results of the EQ-5D -3L questionnaire in table 3 on the quality of life with five dimensions and three levels of problems that are checked by the patient, showed patients with post-stroke neuropathic pain who used gabapentin experienced a perceived problem before using gabapentin, whether it be no problem, moderate problems, and extreme problems. The highest perceived problem is mobility which holds 73,3% from 11 out of 15 total patients, 3 patients experience extreme problems and 1 patient experiences no problem. Self-care is as much as 66.7% in experiencing moderate problems and no problem is experienced at a percentage of 26.7%, and 1 patient experiences extreme problems. Patients also experienced problems in daily activities, 60% in moderate problems, 26.7% in extreme problems and 13.3% in no problem. Pain/discomfort is experienced at a percentage of 60% in moderate problems, and 40% in extreme problems. The least perceived problem is anxiety or depression where 40% of patients experience moderate problems and no problem is at 60%. Even though the patient felt pain, most patients do not experience feelings of depression or anxiety with pain being felt.

After the usage of gabapentin for 2 weeks, the percentage of patients who experience pain/discomfort decreased from 60% in experiencing extreme problems to 40% in experiencing moderate problems. The percentage of mobility decreased from 73.3% to 40% in experiencing moderate problems and an increase in experiencing little to no problem from 6.7% to 60%. Percentage of experiencing moderate problems in daily activities fell from 60% to 53.3%. Self-care percentage of experiencing little to no problems increased from 66.7% to 80%. This proves the effectiveness of gabapentin as a treatment of post-stroke neuropathic pain [17].

CONCLUSION

From the results of research conducted in NTB Regional General Hospital, it can be concluded that: The measurement of pain intensity using the Wong-Baker Faces Pain Rating Scale to measure the pain patients feel experienced a significant reduction in pain intensity between before and after the use of gabapentin as big as 4.26 ± 0.18. Measurement of quality of life using the EQ-5D-3L questionnaire to increase the quality of life in all its dimensions, namely mobility from 6.7% to 60% in experiencing no problem, self-care from 26.7% to 80% in experiencing no problem, daily activities from 13.3% to 46.7%, in experiencing no problem, pain/discomfort from 60% of experiencing moderate problems to 60% of experiencing no problems, anxiety/depression of 60% in experiencing no problem to 100% of experiencing no

problem. Measurement of quality of life using the EQ-VAS questionnaire to assess health conditions that can be imagined by the patient showed a significant increase in quality of life between before and after the usage of gabapentin in the amount of 32.66.

ACKNOWLEDGMENTS
The authors thank the heads and staffs of the hospitals who assisted the researcher in conducting this research.

AUTHORS' CONTRIBUTION
Nurul Q., Dr. Tri Murti A., Wirawan A., BQ Leni N., and Aulia A. contributed to the design of the case report and to the writing of the manuscript and have reviewed the article.

CONFLICTS OF INTEREST
All authors have none to declare.

REFERENCE
[1] P. M. PhD, *Medical Neurobiology*. OUP USA, 2011.
[2] "POST-STROKE PSYCHIATRIC DISORDERS: AN OVERVIEW ON ITS SCREENING AND MANAGEMENT | Chandrasekar | Asian Journal of Pharmaceutical and Clinical Research." [Online]. Available: https://innovareacademics.in/journals/index.php/ajpcr/article/view/26047. [Accessed: 08-Jan-2019].
[3] F. O. R. Chronic, D. Prevention, I. Health, Q. Of, L. For, and a L. L. People, "Heart Disease and Stroke Prevention Addressing the Nation'S Leading Killers," *Heart Dis.*, 2009.
[4] D. T. Lackland *et al.*, "Factors influencing the decline in stroke mortality: a statement from the American Heart Association/American Stroke Association," *Stroke*, vol. 45, no. 1, pp. 315–353, Jan. 2014.
[5] "heart-disease-and-stroke-statistics-2018---at-a-glance-ucm_498848.pdf." .
[6] P. Utami, Z. Ikawati, and - Setyaningsih, "Perbandingan Efek Terapi Gabapentin dan Amitriptilin pada Pasien Stroke dengan Nyeri Neuropati," *Mutiara Med. J. Kedokt. Dan Kesehat.*, vol. 13, no. 2, pp. 89–97, Feb. 2016.
[7] O. van Hecke, S. K. Austin, R. A. Khan, B. H. Smith, and N. Torrance, "Neuropathic pain in the general population: a systematic review of epidemiological studies," *Pain*, vol. 155, no. 4, pp. 654–662, Apr. 2014.
[8] K. Keskinbora, A. F. Pekel, and I. Aydinli, "Periferik nöropatik ağrinin kontrolünde gabapentin ve amitriptilinin etkinliğinin karşilaştirilmasi," *Agri*, vol. 18, no. 2, pp. 34–40, 2006.
[9] I. Cahyaningsih, R. Handayani, and setyaningsih, "The Comparison of Gabapentin and Amitriptilin Effectivity as Pain Therapy in Herniated Nucleus Pulposus," *Int. J. Public Health Sci.*, vol. 4, no. 3, pp. 225–231, 2015.
[10] "Home," *Wong-Baker FACES Foundation*. [Online]. Available: http://wongbakerfaces.org/. [Accessed: 27-Nov-2018].
[11] G. Balestroni and G. Bertolotti, "[EuroQol-5D (EQ-5D): an instrument for measuring quality of life]," *Monaldi Arch. Chest Dis. Arch. Monaldi Mal. Torace*, vol. 78, no. 3, pp. 155–159, Sep. 2012.
[12] M. Butt, A. M. Ali, and M. M. Bakry, "HEALTH-RELATED QUALITY OF LIFE IN POORLY CONTROLLED TYPE 2 DIABETES PATIENTS - ASSOCIATION OF PATIENTS' CHARACTERISTICS WITH EQ-5D DOMAINS, MEAN EQ-5D SCORES, AND VISAUL ANALOG SCALE SCORE," *Asian J. Pharm. Clin. Res.*, vol. 11, no. 1, pp. 93–98, Jan. 2018.
[13] I. Buchholz, M. F. Janssen, T. Kohlmann, and Y.-S. Feng, "A Systematic Review of Studies Comparing the Measurement Properties of the Three-Level and Five-Level Versions of the EQ-5D,"

PharmacoEconomics, vol. 36, no. 6, pp. 645–661, Jun. 2018.

[14] J. Pattanaphesaj and M. Thavorncharoensap, "Measurement properties of the EQ-5D-5L compared to EQ-5D-3L in the Thai diabetes patients," *Health Qual. Life Outcomes*, vol. 13, p. 14, Feb. 2015.

[15] "Gabapentin for chronic neuropathic pain in adults." [Online]. Available: /CD007938/SYMPT_gabapentin-chronic-neuropathic-pain-adults. [Accessed: 27-Nov-2018].

[16] "Comparative Study of Safety and Efficacy of Gabapentin Versus Amitriptyline in Patients With Painful Diabetic Peripheral Neuropathy, A Randomized open Label Parallel Group Study | Biomedical and Pharmacology Journal." [Online]. Available: http://biomedpharmajournal.org/vol10no3/comparative-study-of-safety-and-efficacy-of-gabapentin-versus-amitriptyline-in-patients-with-painful-diabetic-peripheral-neuropathy-a-randomized-open-label-parallel-group-study/. [Accessed: 27-Nov-2018].

[17] O. Hesami, K. gharagozli, N. Beladimoghadam, F. Assarzadegan, B. Mansouri, and M. Sistanizad, "The Efficacy of Gabapentin in Patients with Central Post-stroke Pain," *Iran. J. Pharm. Res. IJPR*, vol. 14, no. Suppl, pp. 95–101, 2015.

ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 12, Issue 3, 2019

Online - 2455-3891
Print - 0974-2441

Research Article

EFFECTIVENESS OF GABAPENTIN USAGE TOWARD REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POST-STROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018

NURUL QIYAAM[1]*, WIRAWAN ADIKUSUMA[1], BAIQ LENY NOPITASARI[1], TRI MURTI ANDAYANI[1], AULIA AMINI[2]

[1]Department of Pharmacy, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. [2]Department of Midwifery, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. Email: nuqi.gra@gmail.com

Received: 08 January 2019, Revised and Accepted: 16 January 2019

ABSTRACT

Objective: Stroke is defined as a sudden loss of brain function due to blockade/rupture of the brain's blood vessels. Data collected by the Indonesian Stroke Foundation show that Indonesia ranks first in Asia as the country with the highest number of stroke sufferers. The purpose of this study was to determine the effectiveness of the use of gabapentin to reduce pain intensity and improve the quality of life of post-stroke neuropathic pain in NTB Province hospital patients.

Methods: This study was carried out in the period of June–July 2018. The population was all post-stroke neuropathic patients who received gabapentin therapy in regional general hospital, West Nusa Tenggara Province.

Results: The results of the study using questionnaire EQ-5D-3L after using gabapentin for 2 weeks. Patients experienced an improvement in the quality of life in each dimension items, namely the ability to walk/move from 6.7%, no problem to 60%, no self-care, 26.7% no problem to be 80% without problems, usual activities carried out from 13.3% had no problems to 46.7% had no problems, feeling of pain/discomfort from 60% having moderate problems to 60% had no problems, and anxiety/depression of 60% had no problem being 100% has no problem. While the measurement of the quality of life using the EQ-VAS questionnaire, there was a significant improvement in the quality of life between before and after using gabapentin at 32.66.

Conclusion: The use of gabapentin has effectiveness on reduction of pain intensity and the quality of life of post-stroke neuropathic patients in regional general hospital, West Nusa Tenggara Province year 2018.

Keywords: Neuropathy, Post-stroke, Gabapentin, Pain intensity, Quality of life.

© 2019 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4. 0/) DOI: http://dx.doi.org/10.22159/ajpcr.2019.v12i3.31035

INTRODUCTION

Stroke is defined as a sudden loss of brain function caused by the blockage or the rupture of blood vessels of the brain [1,2]. Pathological classification stroke is ischemic stroke and hemorrhagic stroke [3]. Based on the data from the American Heart Association, stroke is the world's second-leading cause of death in the age group of over 60 years and the fifth-leading cause of death in the age group of 15–59 years [4]. In the United States, it is recorded that almost every 45 s someone has a case of stroke, and every 4 s experienced a death due to stroke [5]. Medical treatment for post-stroke pain in Indonesia had already begun using tricyclic antidepressant groups such as amitriptyline and anticonvulsants groups such as gabapentin [6]. The response of patients using these two drugs is good but since 2013, both of them are no longer included in the list and price ceiling for the treatment of injury pain because of weak scientific evidence on the use of post-stroke pain so that the management of pain therapy post-stroke becomes less effective [7].

Several studies conducted a study comparing the therapeutic effects of gabapentin and amitriptyline in post-stroke with neuropathic pain. Both gabapentin and amitriptyline provided effective pain control in peripheral neuropathic pain. In addition, gabapentin was more effective, especially in paroxysmal shooting pain than other pain qualities [8]. The comparison between gabapentin and amitriptyline stated that there is no difference in the therapeutic effect of herniated nucleus pulposus [9]. This study aims to know the effectiveness of the usage of gabapentin to decrease pain intensity and improve the patients' quality of life with neuropathic post-stroke in Poly Neurosurgery of Regional General Hospital, NTB.

METHODS

This study uses quasi-experimental, before the patient is given informed consent to retrieve patient data prospectively using the Wong-Baker Faces Pain Rating Scale (WBFPRC) to measure the reduction in pain intensity [10], and a questionnaire Euroqol 5 Dimension (EQ-5D) is used to measure the quality of life [11], analysis of variance and *t*-test were performed to analyze the mean difference in visual analog scale (VAS) and EQ-5D scores between subgroups of patients [12] and assess the health condition of the patient, comprising from EQ-5D-3L to measure improve the patient's quality of life [13,14]. The research was conducted in Poly Neurosurgery of Regional General Hospital, NTB, in June–July 2018.

The samples in this study were all the stroke outpatients who undergo neuropathic pain in Provincial General Hospital, NTB, including inclusion and exclusion criteria. The effectiveness of therapy using Wong-Backer Faces Pain Rating Scale used to measure the reduction in pain intensity, EQ-5D-3L questionnaire, and EQ-VAS which is used to measure the patient's quality of life.

EQ-5D-3L questionnaire consists of five dimensions: Mobility, self-care, activities, pain/discomfort, and anxiety/depression and in every dimension have a level such as no problem, moderate problems, and extreme problems. Levels of perceived problems are marked with (√) in each dimension and coded 1 in column 1, column 2 is coded

2, and column 3 coded 3. Description: Column 1 = No problem in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 2 = Moderate problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 3 = Extreme problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. EQ-VAS questionnaire (visual analog scale) is used to assess the health condition of the patient. A score of 100 is given for the best health conditions imaginable and a score of 0 for the worst health conditions that can be imagined. Questionnaires were given to patients before therapy and after 4 weeks of therapy.

RESULTS

In total, we recruited 15 study patients with post-stroke neuropathic. Demographic characteristics are summarized in Table 1. Patients age ranged from 20 to 83 years. Male accounted for 8 (53%) and education level up to senior high school 12 (80%).

Analysis of differences in pain intensity before and after gabapentin therapy to decrease pain intensity by the help of SPSS 16.0 for Windows, where the analysis uses paired sample *t*-test. Results of research conducted using the WBFPRC can be seen in Table 2.

Quality of life can be seen from the questionnaire respondents EQ-5D-3L. Questionnaire EQ-5D-3L has five dimensions: Mobility, self-care, activities, pain/discomfort, and anxiety/depression and has three levels of problems faced by patients: No problems, moderate problems, and extreme problems. Results of research conducted using the EQ-5D-3L questionnaire can be seen in Table 3.

EQ-VAS questionnaire is used to assess the imaginable health condition. In this questionnaire, the best health condition imaginable is rated 100 and the worst health conditions are rated 0. The results of the research conducted using the EQ-VAS questionnaire can be seen in Table 4.

DISCUSSION

Based on Table 2, it showed a mean ± standard deviation result for the before data which is 8.06±1.38, after data 3.80±1.20, and both the data have difference in results which is 4.26±0.18 means that there is a decrease in pain as much as 4.26 in the treatment of gabapentin 2 × 300 medication for 2 weeks also strengthened by the results of a $p<0.05$ so that there are significant differences in before and after treatment. This research may indicate that the use of gabapentin 300 mg 2 times daily for 2 weeks has effectiveness in reducing pain intensity, results from this study also strengthened with a previous study conducted where gabapentin is effective in reducing the intensity of the neuropathic post-stroke pain [6].

This is consistent with the theory that gabapentin may take effect after 1–2 weeks of usage and help reduce pain when used for at least 2–3 months [6]. Gabapentin also has the effect of which can reduce pain in patients with painful diabetic neuropathy, it is supported by the previous studies that have been done using gabapentin to patients with painful diabetic neuropathy [15]. The previous studies conducted compared gabapentin with amitriptyline, where it was obtained that gabapentin amitriptyline is superior in terms of reducing pain [16].

Based on the results of the EQ-5D-3L questionnaire in Table 3 on the quality of life with five dimensions and three levels of problems that are checked by the patient showed patients with post-stroke neuropathic pain who used gabapentin experienced a perceived problem before using gabapentin, whether it be no problem, moderate problems, and extreme problems. The highest perceived problem is mobility which holds 73,3% from 11 of 15 total patients, three patients experience extreme problems, and one patient experiences no problem. Self-care is as much as 66.7% in experiencing moderate problems and no problem is experienced at a percentage of 26.7%, and one patient experiences extreme problems. Patients also experienced problems in daily activities, 60% in moderate problems, 26.7% in extreme problems, and 13.3% in no problem. Pain/discomfort is experienced at a percentage of 60% in moderate problems and 40% in extreme problems. The least perceived problem is anxiety or depression where 40% of patients experience moderate problems and no problem is at 60%. Even though the patient felt pain, most patients do not experience feelings of depression or anxiety with pain being felt.

After the usage of gabapentin for 2 weeks, the percentage of patients who experience pain/discomfort decreased from 60% in experiencing extreme problems to 40% in experiencing moderate problems. The percentage of mobility decreased from 73.3% to 40% in experiencing moderate problems and an increase in experiencing little to no problem from 6.7% to 60%. Percentage of experiencing moderate problems in daily activities fell from 60% to 53.3%. Self-care percentage of experiencing little to no problems increased from 66.7% to 80%. This proves the effectiveness of gabapentin as a treatment of post-stroke neuropathic pain [17].

Table 1: Baseline characteristics of participants (n=15)

Characteristics	n (%)
Gender	
Male	8 (53)
Female	7 (47)
Education level	
Up to senior high school	12 (80)
Undergraduate	3 (20)
Age (years)	
<60	5 (33)
≥60	10 (67)

Table 2: Pain intensity difference before and after the use of gabapentin

Group	Mean±SD	Δ	p
Before	8.06±1.38	4.26±0.18	0.029*
After	3.80±1.20		

SD: Standard deviation. *p<0.05, Δ: Increase adherence, p value of paired sample t-test, SD: Standard deviation

CONCLUSION

From the results of research conducted in NTB Regional General Hospital, it can be concluded that the measurement of pain intensity using the WBFPRC to measure the pain patients feel experienced a significant reduction in pain intensity between before and after the use of gabapentin as big as 4.26±0.18. Measurement of quality of life using the EQ-5D-3L questionnaire to increase the quality of life in all its dimensions, namely mobility from 6.7% to 60% in experiencing no problem, self-care from 26.7% to 80% in experiencing no problem, daily activities from 13.3% to 46.7% in experiencing no problem, pain/discomfort from 60% of experiencing moderate problems to 60% of experiencing no problems, and anxiety/depression of 60% in experiencing no problem to 100% of experiencing no problem. Measurement of the quality of life using the EQ-VAS questionnaire to assess health conditions that can be imagined by the patient showed a significant increase in quality of life between before and after the usage of gabapentin in the amount of 32.66.

ACKNOWLEDGMENTS

The authors thank the heads and staffs of the hospitals who assisted the researcher in conducting this research.

AUTHOR'S CONTRIBUTIONS

Nurul Q., Dr. Tri Murti A., Wirawan A., BQ Leni N., and Aulia A. contributed to the design of the case report and to the writing of the manuscript and have reviewed the article.

Table 3: Patient response to every dimension of the EQ-5D-3L questionnaire

Dimension	Before treatment			After treatment		
	NP, n (%)	MP, n (%)	EP, n (%)	NP, n (%)	MP, n (%)	EP, n (%)
Mobility	1 (6.7)	11 (73.3)	3 (20)	9 (60)	6 (40)	0 (0)
Self-care	4 (26.7)	10 (66.7)	1 (6.7)	12 (80)	3 (20)	0 (0)
Daily activities	2 (13.3)	9 (60)	4 (26.7)	7 (46.7)	8 (53.3)	0 (0)
Pain/discomfort	0 (0)	9 (60)	6 (40)	9 (60)	6 (40)	0 (0)
Anxiety/depression	9 (60)	6 (40)	0 (0)	15 (100)	0 (0)	0 (0)

n: Number of patients, NB: No problem, MP: Moderate problems, EP: Extreme problems

Table 4: Euroqol-visual analog scale value before and after the use of gabapentin

Group	Mean±SD	p
Before	36.00±12.98	0.028*
After	68.66±9.90	

*p<0.05, Δ: Increase adherence, the p value of a paired sample t-test, SD: Standard deviation

CONFLICTS OF INTEREST

All authors have none to declare.

REFERENCES

1. Mason P. Medical Neurobiology. USA: Oxford University Press; 2011.
2. Chandrasekar K. Post-stroke psychiatric disorders: An overview on its screening and management. Asian J Pharm Clin Res. Available from: https://www.innovareacademics.in/journals/index.php/ajpcr/article/view/26047. [Last accessed on 2019 Jan 08].
3. Heart Disease and Stroke Prevention Addressing the Nation's Leading Killers. Heart Dis; 2009.
4. Lackland DT, Roccella EJ, Deutsch AF, Fornage M, George MG, Howard G, *et al.* Factors influencing the decline in stroke mortality: A statement from the American Heart Association/American stroke association. Stroke 2014;45:315-53.
5. Available from: http://www.heart-disease-and-stroke-statistics-2018-at-a-glance-ucm_498848.pdf.
6. Utami P, Ikawati Z, Setyaningsih S. Perbandingan efek terapi gabapentin dan amitriptilin pada pasien stroke dengan nyeri neuropati. Mutiara Med J Kedokt Dan Kesehatan 2016;13:89-97.
7. van Hecke O, Austin SK, Khan RA, Smith BH, Torrance N. Neuropathic pain in the general population: A systematic review of epidemiological studies. Pain 2014;155:654-62.
8. Keskinbora K, Pekel AF, Aydinli I. Periferik nöropatik ağrinin kontrolünde gabapentin ve amitriptilinin etkinliğinin karşilaştirilmasi. Agri 2006;18:34-40.
9. Cahyaningsih I, Handayani R, Setyaningsih. The comparison of gabapentin and amitriptilin effectivity as pain therapy in herniated nucleus pulposus. Int J Public Health Sci 2015;4:225-31.
10. Home. Wong-Baker FACES Foundation. Available from: http://www.wongbakerfaces.org/. [Last accessed on 2018 Nov 27].
11. Balestroni G, Bertolotti G. EuroQol-5D (EQ-5D): An instrument for measuring quality of life. Monaldi Arch Chest Dis 2012;78:155-9.
12. Butt M, Ali AM, Bakry MM. Health-related quality of life in poorly controlled Type 2 diabetes patients-association of patients' characteristics with EQ-5D domains, mean eq-5d scores, and visaul analog scale score. Asian J Pharm Clin Res 2018;11:93-8.
13. Buchholz I, Janssen MF, Kohlmann T, Feng YS. A systematic review of studies comparing the measurement properties of the three-level and five-level versions of the EQ-5D. Pharmacoeconomics 2018;36:645-61.
14. Pattanaphesaj J, Thavorncharoensap M. Measurement properties of the EQ-5D-5L compared to EQ-5D-3L in the thai diabetes patients. Health Qual Life Outcomes 2015;13:14.
15. Gabapentin for Chronic Neuropathic Pain in Adults. Available from: http://www./CD007938/SYMPT_gabapentin-chronic-neuropathic-pain-adults. [Last accessed on 2018 Nov 27].
16. Comparative Study of Safety and Efficacy of Gabapentin Versus Amitriptyline in Patients With Painful Diabetic Peripheral Neuropathy, A Randomized open Label Parallel Group Study. Biomedical and Pharmacology Journal. Available from: http://www.biomedpharmajournal.org/vol10no3/comparative-study-of-safety-and-efficacy-of-gabapentin-versus-amitriptyline-in-patients-with-painful-diabetic-peripheral-neuropathy-a-randomized-open-label-parallel-group-study/. [Last accessed on 2018 Nov 27].
17. Hesami O, Gharagozli K, Beladimoghadam N, Assarzadegan F, Mansouri B, Sistanizad M, *et al.* The efficacy of gabapentin in patients with central post-stroke pain. Iran J Pharm Res 2015;14:95-101.

ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 12, Issue 3, 2019

Online - 2455-3891
Print - 0974-2441

Research Article

EFFECTIVENESS OF GABAPENTIN USAGE TOWARD REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POST-STROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018

NURUL QIYAAM[1]*, WIRAWAN ADIKUSUMA[1], BAIQ LENY NOPITASARI[1], TRI MURTI ANDAYANI[2], AULIA AMINI[3]

AQ1

[1]Department of Pharmacy, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. [2]???, Faculty of Pharmacy, University of Gadjah Mada, Yogyakarta, Indonesia. [3]Department of Midwifery, Faculty of Health Science, University of Muhammadiyah Mataram, Indonesia. Email: nuqi.gra@gmail.com

Received: 08 January 2019, Revised and Accepted: 16 January 2019

ABSTRACT

Objective: Stroke is defined as a sudden loss of brain function due to blockade/rupture of the brain's blood vessels. Data collected by the Indonesian Stroke Foundation show that Indonesia ranks first in Asia as the country with the highest number of stroke sufferers. The purpose of this study was to determine the effectiveness of the use of gabapentin to reduce pain intensity and improve the quality of life of post-stroke neuropathic pain in NTB Province hospital patients.

Methods: This study was carried out in the period of June–July 2018. The targeted population was all post-stroke neuropathic patients who received gabapentin therapy in NTB provincial hospital. Affordable populations are post-stroke neuropathic pain patients who seek outpatient treatment at NTB provincial hospital that meets the inclusion and exclusion criteria. The results of the data will be analyzed using paired sample *t*-test. Obtained 15 patients were willing to participate in this study.

AQ2

Results: The results of the study using questionnaire EQ-5D-3L after using gabapentin for 2 weeks. Patients experienced an improvement in the quality of life in each dimension items, namely the ability to walk/move from 6.7%, no problem to 60%, no self-care, 26.7% no problem to be 80% without problems, usual activities carried out from 13.3% had no problems to 46.7% had no problems, feeling of pain/discomfort from 60% having moderate problems to 60% had no problems, and anxiety/depression of 60% had no problem being 100% has no problem. While the measurement of the quality of life using the EQ-VAS questionnaire, there was a significant improvement in the quality of life between before and after using gabapentin at 32.66.

Conclusion: The use of gabapentin has effectiveness on reduction of pain intensity and the quality of life of post-stroke neuropathic patients in regional general hospital, West Nusa Tenggara Province year 2018.

Keywords: Neuropathy, Post-stroke, Gabapentin, Pain intensity, Quality of life.

© 2019 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4. 0/) DOI: http://dx.doi.org/10.22159/ajpcr.2019.v12i3.31035

INTRODUCTION

Stroke is defined as a sudden loss of brain function caused by the blockage or the rupture of blood vessels of the brain [1,2]. Pathological classification stroke is ischemic stroke and hemorrhagic stroke [3]. Based on the data from the American Heart Association, stroke is the world's second-leading cause of death in the age group of over 60 years and the fifth-leading cause of death in the age group of 15–59 years [4]. In the United States, it is recorded that almost every 45 s someone has a case of stroke, and every 4 s experienced a death due to stroke [5]. Medical treatment for post-stroke pain in Indonesia had already begun using tricyclic antidepressant groups such as amitriptyline and anticonvulsants groups such as gabapentin [6]. The response of patients using these two drugs is quite good, but since 2013, both drugs are no longer included in the list of list and price ceiling for the treatment of injury pain due to weak scientific evidence of the drug on the use of post-stroke pain so that the management of pain therapy post-stroke becomes less effective [7].

AQ2

Several studies conducted a study comparing the therapeutic effects of gabapentin and amitriptyline in post-stroke with neuropathic pain. Both gabapentin and amitriptyline provided effective pain control in peripheral neuropathic pain. In addition, gabapentin was more effective, especially in paroxysmal shooting pain than other pain qualities [8]. The comparison between gabapentin and amitriptyline stated that there is no difference in the therapeutic effect of herniated nucleus pulposus [9]. This study aims to know the effectiveness of the usage of gabapentin to decrease pain intensity and improve the patients' quality of life with neuropathic post-stroke in Poly Neurosurgery of Regional General Hospital, NTB.

METHODS

This study uses quasi-experimental, before the patient is given informed consent to retrieve patient data prospectively using the Wong-Baker Faces Pain Rating Scale (WBFPRC) to measure the reduction in pain intensity [10], and a questionnaire Euroqol 5 Dimension (EQ-5D) is used to measure the quality of life [11], analysis of variance and *t*-test were performed to analyze the mean difference in visual analog scale (VAS) and EQ-5D scores between subgroups of patients [12] and assess the health condition of the patient, comprising from EQ-5D-3L to measure improve the patient's quality of life [13,14]. The research was conducted in Poly Neurosurgery of Regional General Hospital, NTB, in June–July 2018.

The samples in this study were all the stroke outpatients who undergo neuropathic pain in Provincial General Hospital, NTB, including inclusion and exclusion criteria. The effectiveness of therapy using Wong-Backer Faces Pain Rating Scale used to measure the reduction in pain intensity, EQ-5D-3L questionnaire, and EQ-VAS which is used to measure the patient's quality of life.

EQ-5D-3L questionnaire consists of five dimensions: Mobility, self-care, activities, pain/discomfort, and anxiety/depression and in every dimension have a level such as no problem, moderate problems, and extreme problems. Levels of perceived problems are marked with (√) in each dimension and coded 1 in column 1, column 2 is coded 2, and column 3 coded 3. Description: Column 1 = No problem in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 2 = Moderate problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 3 = Extreme problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. EQ-VAS questionnaire (visual analog scale) is used to assess the health condition of the patient. A score of 100 is given for the best health conditions imaginable and a score of 0 for the worst health conditions that can be imagined. Questionnaires were given to patients before therapy and after 4 weeks of therapy.

RESULTS

In total, we recruited 15 study patients with post-stroke neuropathic. Demographic characteristics are summarized in Table 1. Patients age ranged from 20 to 83 years. Male accounted for 8 (53%) and education level up to senior high school 12 (80%).

Analysis of differences in pain intensity before and after gabapentin therapy to decrease pain intensity by the help of SPSS 16.0 for Windows, where the analysis uses paired sample *t*-test. Results of research conducted using the WBFPRC can be seen in Table 2.

Quality of life can be seen from the questionnaire respondents EQ-5D-3L. Questionnaire EQ-5D-3L has five dimensions: Mobility, self-care, activities, pain/discomfort, and anxiety/depression and has three levels of problems faced by patients: No problems, moderate problems, and extreme problems. Results of research conducted using the EQ-5D-3L questionnaire can be seen in Table 3.

EQ-VAS questionnaire is used to assess the imaginable health condition. In this questionnaire, the best health condition imaginable is rated 100 and the worst health conditions are rated 0. The results of the research conducted using the EQ-VAS questionnaire can be seen in Table 3.

DISCUSSION

Based on Table 2, it showed a mean ± standard deviation result for the before data which is 8.06±1.38, after data 3.80±1.20, and both the data have difference in results which is 4.26±0.18 means that there is a decrease in pain as much as 4.26 in the treatment of gabapentin 2 × 300 medication for 2 weeks also strengthened by the results of a $p<0.05$ so that there are significant differences in before and after treatment. This research may indicate that the use of gabapentin 300 mg 2 times daily for 2 weeks has effectiveness in reducing pain intensity, results from this study also strengthened with a previous study conducted where gabapentin is effective in reducing the intensity of the neuropathic post-stroke pain [6].

This is consistent with the theory that gabapentin may take effect after 1–2 weeks of usage and help reduce pain when used for at least 2–3 months [6]. Gabapentin also has the effect of which can reduce pain in patients with painful diabetic neuropathy, it is supported by the previous studies that have been done using gabapentin to patients with painful diabetic neuropathy [15]. The previous studies conducted compared gabapentin with amitriptyline, where it was obtained that gabapentin amitriptyline is superior in terms of reducing pain [16].

Based on the results of the EQ-5D-3L questionnaire in Table 3 on the quality of life with five dimensions and three levels of problems that are checked by the patient showed patients with post-stroke neuropathic pain who used gabapentin experienced a perceived problem before using gabapentin, whether it be no problem, moderate problems, and extreme problems. The highest perceived problem is mobility which holds 73,3% from 11 of 15 total patients, three patients experience extreme problems, and one patient experiences no problem. Self-care is as much as 66.7% in experiencing moderate problems and no problem is experienced at a percentage of 26.7%, and one patient experiences extreme problems. Patients also experienced problems in daily activities, 60% in moderate problems, 26.7% in extreme problems, and 13.3% in no problem. Pain/discomfort is experienced at a percentage of 60% in moderate problems and 40% in extreme problems. The least perceived problem is anxiety or depression where 40% of patients experience moderate problems and no problem is at 60%. Even though the patient felt pain, most patients do not experience feelings of depression or anxiety with pain being felt.

After the usage of gabapentin for 2 weeks, the percentage of patients who experience pain/discomfort decreased from 60% in experiencing extreme problems to 40% in experiencing moderate problems. The percentage of mobility decreased from 73.3% to 40% in experiencing moderate problems and an increase in experiencing little to no problem from 6.7% to 60%. Percentage of experiencing moderate problems in daily activities fell from 60% to 53.3%. Self-care percentage of experiencing little to no problems increased from 66.7% to 80%. This proves the effectiveness of gabapentin as a treatment of post-stroke neuropathic pain [17].

Table 1: Baseline characteristics of participants (n=15)

Characteristics	n (%)
Gender	
Male	8 (53)
Female	7 (47)
Education level	
Up to senior high school	12 (80)
Undergraduate	3 (20)
Age (years)	
<60	5 (33)
≥60	10 (67)

Table 2: Pain intensity difference before and after the use of gabapentin

Group	Mean±SD	Δ	p
Before	8.06±1.38	4.26±0.18	0.029*
After	3.80±1.20		

SD: Standard deviation. *p<0.05, Δ: Increase adherence, p value of paired sample t-test, SD: Standard deviation

CONCLUSION

From the results of research conducted in NTB Regional General Hospital, it can be concluded that the measurement of pain intensity using the WBFPRC to measure the pain patients feel experienced a significant reduction in pain intensity between before and after the use of gabapentin as big as 4.26±0.18. Measurement of quality of life using the EQ-5D-3L questionnaire to increase the quality of life in all its dimensions, namely mobility from 6.7% to 60% in experiencing no problem, self-care from 26.7% to 80% in experiencing no problem, daily activities from 13.3% to 46.7% in experiencing no problem, pain/discomfort from 60% of experiencing moderate problems to 60% of experiencing no problems, and anxiety/depression of 60% in experiencing no problem to 100% of experiencing no problem. Measurement of the quality of life using the EQ-VAS questionnaire to assess health conditions that can be imagined by the patient showed a significant increase in quality of life between before and after the usage of gabapentin in the amount of 32.66.

ACKNOWLEDGMENTS

The authors thank the heads and staffs of the hospitals who assisted the researcher in conducting this research.

Table 3: Patient response to every dimension of the EQ-5D-3L questionnaire

Dimension	Before treatment			After treatment		
	NP, n (%)	MP, n (%)	EP, n (%)	NP, n (%)	MP, n (%)	EP, n (%)
Mobility	1 (6.7)	11 (73.3)	3 (20)	9 (60)	6 (40)	0 (0)
Self-care	4 (26.7)	10 (66.7)	1 (6.7)	12 (80)	3 (20)	0 (0)
Daily activities	2 (13.3)	9 (60)	4 (26.7)	7 (46.7)	8 (53.3)	0 (0)
Pain/discomfort	0 (0)	9 (60)	6 (40)	9 (60)	6 (40)	0 (0)
Anxiety/depression	9 (60)	6 (40)	0 (0)	15 (100)	0 (0)	0 (0)

n: Number of patients, NB: No problem, MP: Moderate problems, EP: Extreme problems

Table 4: Euroqol-visual analog scale value before and after the use of gabapentin

Group	Mean±SD	p
Before	36.00±12.98	0.028*
After	68.66±9.90	

*p<0.05, Δ: Increase adherence, the p value of a paired sample t-test, SD: Standard deviation

AUTHOR'S CONTRIBUTIONS

Nurul Q., Dr. Tri Murti A., Wirawan A., BQ Leni N., and Aulia A. contributed to the design of the case report and to the writing of the manuscript and have reviewed the article.

CONFLICTS OF INTEREST

All authors have none to declare.

REFERENCES

1. Mason P. Medical Neurobiology. USA: Oxford University Press; 2011.
2. Chandrasekar K. Post-stroke psychiatric disorders: An overview on its screening and management. Asian J Pharm Clin Res. Available from: https://www.innovareacademics.in/journals/index.php/ajpcr/article/view/26047. [Last accessed on 2019 Jan 08].
3. Heart Disease and Stroke Prevention Addressing the Nation's Leading Killers. Heart Dis; 2009.
4. Lackland DT, Roccella EJ, Deutsch AF, Fornage M, George MG, Howard G, *et al.* Factors influencing the decline in stroke mortality: A statement from the American Heart Association/American stroke association. Stroke 2014;45:315-53.
5. Available from: http://www.heart-disease-and-stroke-statistics-2018-at-a-glance-ucm_498848.pdf.
6. Utami P, Ikawati Z, Setyaningsih. Perbandingan efek terapi gabapentin dan amitriptilin pada pasien stroke dengan nyeri neuropati. Mutiara Med J Kedokt Kesehatan 2016;13:89-97.</AQ6>
7. van Hecke O, Austin SK, Khan RA, Smith BH, Torrance N. Neuropathic pain in the general population: A systematic review of epidemiological studies. Pain 2014;155:654-62.
8. Keskinbora K, Pekel AF, Aydinli I. Periferik nöropatik ağrinin kontrolünde gabapentin ve amitriptilinin etkinliğinin karşilaştirilmasi. Agri 2006;18:34-40.
9. Cahyaningsih I, Handayani R, Setyaningsih. The comparison of gabapentin and amitriptilin effectivity as pain therapy in herniated nucleus pulposus. Int J Public Health Sci 2015;4:225-31.
10. Home. Wong-Baker FACES Foundation. Available from: http://www.wongbakerfaces.org/. [Last accessed on 2018 Nov 27].
11. Balestroni G, Bertolotti G. EuroQol-5D (EQ-5D): An instrument for measuring quality of life. Monaldi Arch Chest Dis 2012;78:155-9.
12. Butt M, Ali AM, Bakry MM. Health-related quality of life in poorly controlled Type 2 diabetes patients-association of patients' characteristics with EQ-5D domains, mean eq-5d scores, and visaul analog scale score. Asian J Pharm Clin Res 2018;11:93-8.
13. Buchholz I, Janssen MF, Kohlmann T, Feng YS. A systematic review of studies comparing the measurement properties of the three-level and five-level versions of the EQ-5D. Pharmacoeconomics 2018;36:645-61.
14. Pattanaphesaj J, Thavorncharoensap M. Measurement properties of the EQ-5D-5L compared to EQ-5D-3L in the thai diabetes patients. Health Qual Life Outcomes 2015;13:14.
15. Gabapentin for Chronic Neuropathic Pain in Adults. Available from: http://www./CD007938/SYMPT_gabapentin-chronic-neuropathic-pain-adults. [Last accessed on 2018 Nov 27].
16. Comparative Study of Safety and Efficacy of Gabapentin Versus Amitriptyline in Patients With Painful Diabetic Peripheral Neuropathy, A Randomized open Label Parallel Group Study. Biomedical and Pharmacology Journal. Available from: http://www.biomedpharmajournal.org/vol10no3/comparative-study-of-safety-and-efficacy-of-gabapentin-versus-amitriptyline-in-patients-with-painful-diabetic-peripheral-neuropathy-a-randomized-open-label-parallel-group-study/. [Last accessed on 2018 Nov 27].
17. Hesami O, Gharagozli K, Beladimoghadam N, Assarzadegan F, Mansouri B, Sistanizad M, *et al.* The efficacy of gabapentin in patients with central post-stroke pain. Iran J Pharm Res 2015;14:95-101.

Author Queries???
AQ1:Kindly provide department.
AQ2:Kindly review the sentence.
AQ3:Kindly provide complete reference details
AQ4:Kindly provide author initial
AQ5:Kindly provide in English language
AQ6: Kindly cite table 4 in the text part.