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HOME / ARCHIVES / Vol 11 No 1 (2021): Volume 11, Issue 1, Jan-Feb 2021

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#### LETTER TO EDITOR

##### GLOBAL EPIDEMIOLOGY OF COVID-19 AND THE RISK OF SECOND WAVE

Arslan Habib, Khalid Mahmood Anjum, Zeeshan Ashraf, Umumtumwa Eric Principe, Zahid Hussain, Bilal Khalid, Muhammad Ramzan Pages 1-2

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4653](https://doi.org/10.22270/jddt.v11i1.4653) View HTML

#### CASE STUDIES

##### DRUG SUPPLY MANAGEMENT IN HEALTH CARE INSTITUTIONS IN SRI LANKA: A CASE STUDY

J.L. Himali R. Wijegunasekara Pages 3-7

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4464](https://doi.org/10.22270/jddt.v11i1.4464) View HTML

##### METABOLIC SYNDROME RISK ASSOCIATED WITH ATYPICAL ANTIPSYCHOTIC MEDICATION: A CASE REPORT

Julaeha Julaeha, Umi Athiyah, Josephine P Ayuningtyas, Verra Yuliana, **Andi Hermansyah** Pages 77-79

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4680](https://doi.org/10.22270/jddt.v11i1.4680) View HTML

#### RESEARCH

##### TREATMENT OF HIGH BLOOD PRESSURE IN DIABETIC PATIENTS AND RISK OF UNDERNUTRITION IN A POPULATION IN EXTREME WESTERN ALGERIA

Hamza Nadjib Merad-boudia, Majda Dali-Sahi, Youcef Kachekouche, Nouria Dennon-Medjati, Takwa Salmi, Pr Abderahim Meziane Pages 8-12

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4467](https://doi.org/10.22270/jddt.v11i1.4467) View HTML

##### BIOINFORMATIC APPROACHES FOR IDENTIFICATION OF POTENTIAL REPURPOSABLE DRUGS IN COVID-19

Manisha Mandal, Shyamapada Mandal Pages 13-22

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4472](https://doi.org/10.22270/jddt.v11i1.4472) View HTML

##### FORMULATION AND IN VITRO EVALUATION OF BILAYER TABLETS OF LANSOPRAZOLE AND AMOXYCILLIN TRIHYDRATE FOR THE TREATMENT OF PEPTIC ULCER

Neha Singh, Durga Pandey, Nilesh Jain, Surendra Jain Pages 23-31

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4481](https://doi.org/10.22270/jddt.v11i1.4481) View HTML

##### STUDY ON CORRELATION OF ANTIOXIDANT ACTIVITIES WITH PRESENCE OF PHENOLIC AND FLAVANOID CONTENTS IN EMBLICA OFFICINALIS AND TERMINALIA CHEBULA

Ranjan Singh, Suhas Kumar Pages 32-35

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4667](https://doi.org/10.22270/jddt.v11i1.4667) View HTML

##### FORMULATION AND EVALUATION OF BI-LAYER TABLETS OF KETOROLAC TROMETHAMINE

Dhaval M. Patel, Riddhi Trivedi, Hardik Patel Pages 36-41

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4487](https://doi.org/10.22270/jddt.v11i1.4487) View HTML

##### FORMULATION AND EVALUATION OF ORODISPERSIBLE TABLET OF FLUVASTATIN SODIUM

Pooja Kanathe, Ruchi Jain, Nilesh Jain, Surendra Kumar Jain Pages 42-47

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4498](https://doi.org/10.22270/jddt.v11i1.4498) View HTML

##### TO ESTABLISH BIOEQUIVALENCE OF 50MG METOPROLOL SUCCINATE EXTENDED RELEASE TABLETS IN NORMAL, HEALTHY, ADULT, HUMAN SUBJECT UNDER FASTING CONDITION

Mahavir Singh, Lalit Singh Ranawat Pages 48-59

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4497](https://doi.org/10.22270/jddt.v11i1.4497) View HTML

##### FORMULATION AND EVALUATION OF KETOROLAC TROMETHAMINE MOUTH DISSOLVING TABLETS

Rishabh Bindal, Arpna Indurkha Pages 60-64

Abstract Download PDF View PDF DOI [10.22270/jddt.v11i1.4502](https://doi.org/10.22270/jddt.v11i1.4502) View HTML

##### ANTIPYRETIC ACTIVITY OF HYDROALCOHOLIC EXTRACT OF LEAVES OF COLOCASIA ESCULENTA

Chandrakanta Kushwah. Nitu Singh. Raksha Goswami. Nitesh Jain Pages 65-67



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#### CATEGORIES

Aims & Scope  
Editorial Policies  
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- DEVELOPMENT AND EVALUATION OF NUTRITIOUS SUPPLEMENTARY FOOD PRODUCT IN PHENYL HYDRAZINE INDUCED ANAEMIA IN WISTAR RATS**  
Dipali Hanamghar, Shivani Salokhe, Sachin Tembhurane, Swati Kolhe Pages 68-71
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4654](https://doi.org/10.22270/jddt.v11i1.4654) [View HTML](#)
- FORMULATION AND EVALUATION OF LIPOSOME BY THIN FILM HYDRATION METHOD**  
Mahesh Umbarkar, Swapnil Thakare, Tanaji Sureshe, Amol Giri, Vaibhav Chopade Pages 72-76
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4677](https://doi.org/10.22270/jddt.v11i1.4677) [View HTML](#)
- RESPIRATORY FUNCTION TEST DATA AND MAXIMUM OXYGEN CONSUMPTION OF CHILDREN PLAYING FOOTBALL IN A HOT AND HUMID ENVIRONMENT**  
Jean Michel BAZABA KAYILOU, AÏPE Judith AHOUNOU, Ghislain Aymard MOUKOUMBI MABIKA Pages 80-83
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4505](https://doi.org/10.22270/jddt.v11i1.4505) [View HTML](#)
- MOLECULAR CHARACTERIZATION OF CARBAPENEMASE-PRODUCING ENTEROBACTERIALES IN CHILDREN WITH DIARRHEA IN RURAL BURKINA FASO**  
René Dembélé, Issiaka Soulama, Wendpoulomdé Aimé Désiré Kaboré, Ali Konaté, Assèta Kagambèga, David Coulibaly N'Golo, Oumar Traoré, Abdoulaye Seck, Alfred Sababenedyo Traoré, Nathalie Guessenn, Amy Gassama-Sow, Nicolas Barro Pages 84-92
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4513](https://doi.org/10.22270/jddt.v11i1.4513) [View HTML](#)
- A COMPREHENSIVE STUDY ON KNOWLEDGE, ATTITUDE AND PREVENTIVE MEASURES REGARDING DENGUE FEVER IN BANGLADESH: QUANTITATIVE INTERVIEW AMONG UNIVERSITY STUDENTS.**  
S.M. Farzana, Farzana Binte Sahid, Devaroti Bhattacharjee, Tasniya Nahiyun Zulfiquar, Sanjida Haque, Lubna Jahan, Prodip Kumar Baral, Imtiaj Hossain Chowdhury Pages 93-103
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4525](https://doi.org/10.22270/jddt.v11i1.4525) [View HTML](#)
- THE EFFECT CONSUMPTION OF RED SPINACH JUICE ON HEMOGLOBIN ON PREGNANT WOMAN**  
Siti Saadah Mardiah, Gina Andreyana, Wawan Rismawan Pages 104-107
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4706](https://doi.org/10.22270/jddt.v11i1.4706) [View HTML](#)
- EVALUATION OF ANTIMICROBIAL ACTIVITY OF CEDRELA TOONA ROXB. FRUIT EXTRACTS**  
Kinjal H Shah, Piyush M. Patel Pages 108-109
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4540](https://doi.org/10.22270/jddt.v11i1.4540)
- REVIEW**
- 
- NATURAL SUPER-DISINTEGRANT AGENTS USED IN VARIOUS ORAL SOLID DOSAGE FORMS**  
V.T. Iswariya, Nambaaru Sailaja, CH. Vamsi Krishna, G.S. Annammadevi Pages 110-113
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4681](https://doi.org/10.22270/jddt.v11i1.4681) [View HTML](#)
- TNF- $\alpha$ : A BENEFICIAL OR HARMFUL PATHOGENIC CYTOKINE IN CARDIOVASCULAR SYSTEM**  
Sunny Dhiman, Inder Kumar, Priyankul Palia, Shalini Jamwal, Pankaj Kumar Pages 114-120
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4507](https://doi.org/10.22270/jddt.v11i1.4507) [View HTML](#)
- A REVIEW ON PHARMACOKINETICS, PHARMACODYNAMICS AND CLINICAL ASPECTS OF REMDESIVIR AND FAVIPRAVIR FOR THE TREATMENT OF CORONAVIRUS DISEASE**  
Inder Kumar Pages 121-129
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4475](https://doi.org/10.22270/jddt.v11i1.4475) [View HTML](#)
- METHYLCOBALAMINE (VITAMIN B12): WATER SOLUBLE VITAMIN WITH VARIOUS PHARMACOLOGICAL ASPECT**  
Roopesh Kumar Yadav, Sudhanshu Mishra, Deepti Jain Pages 130-137
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4488](https://doi.org/10.22270/jddt.v11i1.4488) [View HTML](#)
- BIOADHESIVE POLYMERS, PERMEATION ENHANCERS AND TYPES OF DOSAGE FORMS FOR BUCCAL DRUG DELIVERY**  
Kumara Swamy Samanthula, Shobha Rani Satla, Agaiah Goud Bairi Pages 138-145
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4495](https://doi.org/10.22270/jddt.v11i1.4495) [View HTML](#)
- A SYSTEMATIC REVIEW ON LAMOTRIGINE INDUCED SKIN RASHES**  
T.T. Muhammed Anwar, P.P. Muhammed Faris, , Thansiha Pages 146-151
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4633](https://doi.org/10.22270/jddt.v11i1.4633) [View HTML](#)
- RESEARCH OPPORTUNITIES IN UNANI/ GRECO-ARABIAN MEDICINE**  
Mohammad Hashir Pages 152-155
- [Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4634](https://doi.org/10.22270/jddt.v11i1.4634) [View HTML](#)
- UNANI MEDICINE: SIGNIFICANCE OF ASBAB-E-SITTA ZAROORIYA IN TIMES OF PANDEMIC COVID-19**  
Araf Fatma, Aisha Perveen, Sana Ur Rehman, Rabia Khan Pages 156-161

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4636](https://doi.org/10.22270/jddt.v11i1.4636) [View HTML](#)

#### NIOSOMES: A NOVEL CARRIER DRUG DELIVERY SYSTEM

Arumugam Kauslya, Payal D Borawake, Jitendra V Shinde, Rajashree S Chavan

Pages 162-170

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4479](https://doi.org/10.22270/jddt.v11i1.4479) [View HTML](#)

#### MICROSPONGE AS AN EMERGING TECHNIQUE IN NOVEL DRUG DELIVERY SYSTEM

Payal D Borawake, Arumugam Kauslya, Jitendra V Shinde, Rajashree S Chavan

Pages 171-182

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4492](https://doi.org/10.22270/jddt.v11i1.4492) [View HTML](#)

#### A REVIEW ON SOLUBILITY ENHANCEMENT BY SOLID DISPERSION METHOD

Laxmikant B. Dhande, Madhuri T. Deshmukh, Abhijit N. Khopade, Rajkumar V. Shete, Vaibhavi V. Kunjir

Pages 182-187

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4489](https://doi.org/10.22270/jddt.v11i1.4489) [View HTML](#)

#### A REVIEW ON MICROSPPHERE

Prafull Gavhane, Madhuri Deshmukh, Abhijit N. Khopade, Vaibhavi V. Kunjir, Rajkumar V. Shete

Pages 188-194

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4501](https://doi.org/10.22270/jddt.v11i1.4501) [View HTML](#)

#### TANQIYA WA TADEEL (EVACUATION AND REJUVENATION): THE UNANI CONCEPT AS EVOLUTIONARY BASIS FOR CONVENTIONAL STROKE MANAGEMENT

Mohd Nayab, Hina V Kouser, Abdul Nasir Ansari

Pages 195-200

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4686](https://doi.org/10.22270/jddt.v11i1.4686) [View HTML](#)

#### A REVIEW OF NOVEL DRUG DELIVERY CONTROLLED POROSITY OSMOTIC PUMP TABLETS THERAPEUTIC APPROACH AND FUTURE TREND

Kinjal H Shah, Rajashree P Makwana

Pages 201-204

[Abstract](#) [Download PDF](#) [View PDF](#) DOI [10.22270/jddt.v11i1.4541](https://doi.org/10.22270/jddt.v11i1.4541)

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+610426449178

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Interested fields: Pharmaceuticals, Novel Drug Delivery

Dr. Nilesh Jain, Sagar Institute of Research Technology & Science-Pharmacy, Bhopal, India. Phone: +919425074520, Email: [prof.nileshjain@gmail.com](mailto:prof.nileshjain@gmail.com)

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Dr. Surendra K. Jain, Sagar Institute of Research and Technology – Pharmacy, Bhopal, (M.P.)–462041, Email: [prof.surendrajain@gmail.com](mailto:prof.surendrajain@gmail.com)

Dr. Rajeswar Kamalkant Arya, Assistant Professor, Department of Pharmaceutical Sciences Kumaun University, Bhimtal Campus, Nainital, Uttarakhand, India. Email: [rajeshwararya@gmail.com](mailto:rajeshwararya@gmail.com) [rajeshwararya@kunainital.ac.in](mailto:rajeshwararya@kunainital.ac.in) Phone: +91-9758008496 [Website](#) [Google Scholar](#) [ResearchGate](#) [ORCID ID](#) Interested fields: Pharmacy (Novel Drug delivery, Nanotechnology)

Dr. Arun Kumar Singh, Devsthali Vidyapeeth College of Pharmacy, Rudrapur, Uttarakhand, India. Email: [arunsinghpharma@gmail.com](mailto:arunsinghpharma@gmail.com)

Dr. Anand Prem Rajan, School of Bio Sciences and Technology, VIT University, Vellore 632 014, TN, India Phone: Office - +91-(0)416-220-2608; ++91-(0)416-220-2542 E-mail: [aprdbt@gmail.com](mailto:aprdbt@gmail.com) [janandpremrajan@vit.ac.in](mailto:janandpremrajan@vit.ac.in)

Dr. Praveen Kumar Sharma, Associate Professor, Acropolis Institute of Pharmaceutical Education and Research Indore MP 453771 Email ID: [praveensharma@acropolis.edu.in](mailto:praveensharma@acropolis.edu.in) [praveensharma910@gmail.com](mailto:praveensharma910@gmail.com) Phone: 9993706055 [Website](#) [Google Scholar](#) [ResearchGate](#)

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Alembic research park, Vadodara Gujarat, 3900093,  
India

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(452010). Email: [gkssws@gmail.com](mailto:gkssws@gmail.com)

Dr. Dhaval M. Patel, SAL Institute of Pharmacy, Ahmedabad. M:  
08160249184, Email ID: [dhaval.patel@sal.edu.in](mailto:dhaval.patel@sal.edu.in)  
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Dr. Ashish Gupta, Acropolis Institute of Pharmaceutical Education  
and Research Indore MP 453771 Email ID:  
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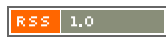
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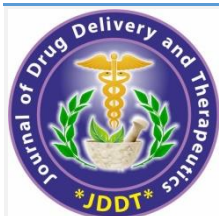
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Case Study

## Metabolic Syndrome Risk Associated with Atypical Antipsychotic Medication: A Case Report

Julaeha Julaeha<sup>1,2\*</sup>, Umi Athiyah<sup>2\*</sup>, Josephine P Ayuningtyas<sup>3</sup>, Verra Yuliana<sup>3</sup>, **Andi Hermansyah<sup>2</sup>**

1. Department of Clinical and Community Pharmacy, Universitas 17 Agustus 1945 Jakarta, Indonesia

2. Department of Pharmacy Practice, Universitas Airlangga, Indonesia

3. Department of Pharmacy, Menur National Mental Hospital, Indonesia

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### Abstract

People with schizophrenia are vulnerable group suffer from metabolic syndrome events. Atypical antipsychotics associated with weight gain, insulin resistance, and profile lipid abnormalities. The present case was 32-year-old man schizophrenia outpatient had experienced metabolic syndrome side effects. Metabolic syndrome characterized by central obesity, hyperglycemia, hypertriglyceridemia, low High Density Lipoprotein (HDL) cholesterol level, and several months feel an increase in appetite. Metabolic syndrome events might be associated with long-term atypical antipsychotics consuming and tobacco use. As pharmacists, We advised the patient to referral primary healthcare service for managing metabolic syndrome side effects. Pharmacists intervention through education and metabolic syndrome screening program have positive impacts on lifestyle modification such as decreasing number of cigarette consumption and caffeine intake, also increasing physical activity.

**Keywords:** Antipsychotics, Atypical antipsychotic, Metabolic syndrome, Pharmacist, Schizophrenia.

#### \*Address for Correspondence:

**Julaeha Julaeha**, Department of Clinical and Community Pharmacy, Universitas 17 Agustus 1945 Jakarta, Indonesia  
**Umi Athiyah**, Department of Pharmacy Practice, Universitas Airlangga, Indonesia

## INTRODUCTION

Schizophrenia is one of chronic mental disorder that cause to the global burden of disease<sup>1</sup>. The majority deaths among people suffering from schizophrenia are associated with physical diseases<sup>2</sup>. Some studies reported that patients with schizophrenia have 20% less life expectancy than general population, the main cause due to coronary heart disease and reported to have 2-3 fold risk of mortality due to cardiovascular events<sup>3,4</sup>. Metabolic syndrome is one of caused cardiovascular disease<sup>1</sup>.

People suffering from schizophrenia have poorer health compared to general population. These populations associated with higher rate of over weight, metabolic abnormalities, tobacco use, alcohol use, poor of diet, and lack of physical activity<sup>5</sup>. Furthermore, metabolic syndrome events increased in patients with schizophrenia treated with atypical antipsychotics<sup>6</sup>. Atypical antipsychotics lead weight gain, increase insulin resistance, and lipid abnormalities<sup>6</sup>.

Some study, highlight that prevalence of metabolic syndrome in schizophrenia patients treated with atypical antipsychotics (20.40%) higher than in schizophrenia patients treated with typical antipsychotics (9.18%)<sup>7</sup>.

## CASE STUDY

A 32-year-old man schizophrenia outpatient with stable condition has diagnosed residual schizophrenia since 15 years ago (at the age of 17 year old). Patient was given antipsychotic medications since 15 years ago. The current medications were clozapine 25 mg once daily, Quetiapine Extended Release (XR) 300 mg once daily, and Depakote Extended Release (XR) 250 mg twice daily. During the treatment process, patient routine take medications and has good adherence score. Patient had no past history of hypertension, diabetes mellitus, and dislipidemia. Patient had family history of hypertension, patient had no family history of diabetes mellitus and dislipidemia. Several months feel an increase in appetite.

## Objective and Clinical data:

Table 1: Objective and Clinical Data

	04-November-2020*	04-December-2020**
Profile of medication	Clozapine 25 mg once daily Quetiapine XR 300 mg once daily Depakote 250 mg XR twice daily	Clozapine 25 mg once daily Quetiapine XR 400 mg once daily Depakote 250 mg XR twice daily
Laboratory testing***	Blood Glucose 483 mg/dL Total Cholesterol 181 mg/dL Triglyceride 566 mg/dL HDL 28 mg/dL	(normal value: <200 mg/dL) (normal value: <200 mg/dL) (normal value: <150 mg/dL) (normal value: >40 mg/dL)
Blood Pressure	153/93 mmHg	123/79 mmHg
Waist circumference	94 CM	93CM
Weight	76 Kg	75 Kg
Height	161 CM	161 CM
Body Mass Index (BMI)	29.34	28.95
Framingham Risk Score (FRS)	6 (10-years cardiovascular disease risk: 2%)	

\*The data were taken before Education and MEtabolic SYndrome Screening (EMESYS) session by pharmacists.

\*\*The data were taken after EMESYS session by pharmacists.

\*\*\*Random blood sampling

## Subjective and social condition data:

Table 2: Subjective and Social Condition Data

	04-November-2020*	04-December-2020**
Education level	Senior high school	
Marital status	Divorce	
Employment	Full time	
Housing condition	Living alone	
Family mental disorder history	Young brother	
Alcohol intake	None	
Caffeine intake	3 cups/day	1 cup/day
Smoking	12 cigarette/day	6 cigarette/day
Physical activity	Occasionally playing football	Farming
Medication Adherence Rating Scale Score	9	9
Subjective Well-being under Neuroleptic Score	107	107

\*The data were taken before Education and MEtabolic SYndrome Screening (EMESYS) session by pharmacists.

\*\*The data were taken after EMESYS session by pharmacists.

**PHARMACISTS ASSESSMENT**

Based on data collected, the patient has good adherence to medication (MARS score  $\geq 8$ ) and adequate quality of life (SWN score  $\geq 80$ ). Based on FRS score, patient has low 10-year cardiovascular disease risk. In other hand, the patient has suffered from metabolic syndrome indicated by central obesity (waist circumference  $\geq 90$  CM), low High Density Lipoprotein cholesterol level (28 mg/dL), and hypertriglyceridemia (566 mg/dL), and hyperglycemia (483

mg/dL). Metabolic syndrome event might be associated with atypical antipsychotic medications and tobacco use.

**DISCUSSION**

Currently, atypical antipsychotics recommended as first choice in schizophrenia medication rather than typical antipsychotics regarding low risk extrapyramidal side effects, non-adherence, and quality of life improvement<sup>8,9</sup>. Nevertheless, the use of antipsychotics especially atypical antipsychotics such as clozapine, olanzapine, quetiapine, and

risperidone are associated with metabolic syndrome events<sup>1</sup>. Patients with schizophrenia also likely engage in unhealthy lifestyle behaviors, which increase the risk metabolic syndrome events and other physical diseases. Tobacco use is one unhealthy lifestyle behaviors that is common among schizophrenia patients. Patients with schizophrenia are twice as likely to smoke as the general population, around 61% of patients with schizophrenia smoke compared to 33% in the general population<sup>2</sup>.

In this case study, a 32-year-old man schizophrenia outpatient had experienced metabolic syndrome side effects. Metabolic syndrome characterized by central obesity, hyperglycemia, hypertriglyceridemia, and low High Density Lipoprotein (HDL) cholesterol level. Metabolic syndrome events might be associated with long-term atypical antipsychotics consuming and tobacco use. Atypical antipsychotics characterized by full antagonism and greater affinity for the 5-HT<sub>2A</sub> receptor<sup>10</sup>. 5-HT<sub>2A</sub> antagonism has been implicated in antipsychotic drug-related weight gain and another metabolic adverse effects. Most SGAs, especially clozapine and olanzapine, are potent 5-HT<sub>2A</sub> antagonists<sup>11</sup>. As pharmacists, We advised the patient to referral primary healthcare service for managing metabolic syndrome side effects. Pharmacists intervention through education and metabolic syndrome screening program have positive impacts on lifestyle modification such as decreasing number of cigarette consumption and caffeine intake, also increasing physical activity. Several studies about the roles of pharmacist in schizophrenia management have better health outcomes for schizophrenia patients<sup>12</sup>.

This study highlights patients with schizophrenia are vulnerable groups suffering from metabolic syndrome due to long-term use of atypical antipsychotics. In addition unhealthy lifestyle behaviors such as tobacco use increased risk of suffering from syndrome metabolic. Early metabolic syndrome screening and regular monitoring metabolic syndrome side effects are recommended. Pharmacists have strategies roles in management schizophrenia treatment by prevention, identification, and resolve drug therapeutic problems through therapeutic monitoring, non-pharmacological intervention such patient education, lifestyle modification, and early detection of side effects. These activities might be implemented by collaboration with another healthcare professional.

## CONCLUSION

Metabolic syndrome events in schizophrenia are associated with long-term atypical antipsychotic use and tobacco use. Non-pharmacological intervention has positive impact on

unhealthy lifestyle reduction. Pharmacists have strategic roles in preventing and screening metabolic syndrome side effects due to antipsychotic use and unhealthy lifestyle through education.

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NIM : 051617097311  
Institusi : Prodi S3 Farmasi  
Universitas Airlangga  
Unit/Lembaga/Tempat Penelitian : Rumah Sakit Jiwa Menur Provinsi Jawa Timur.

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