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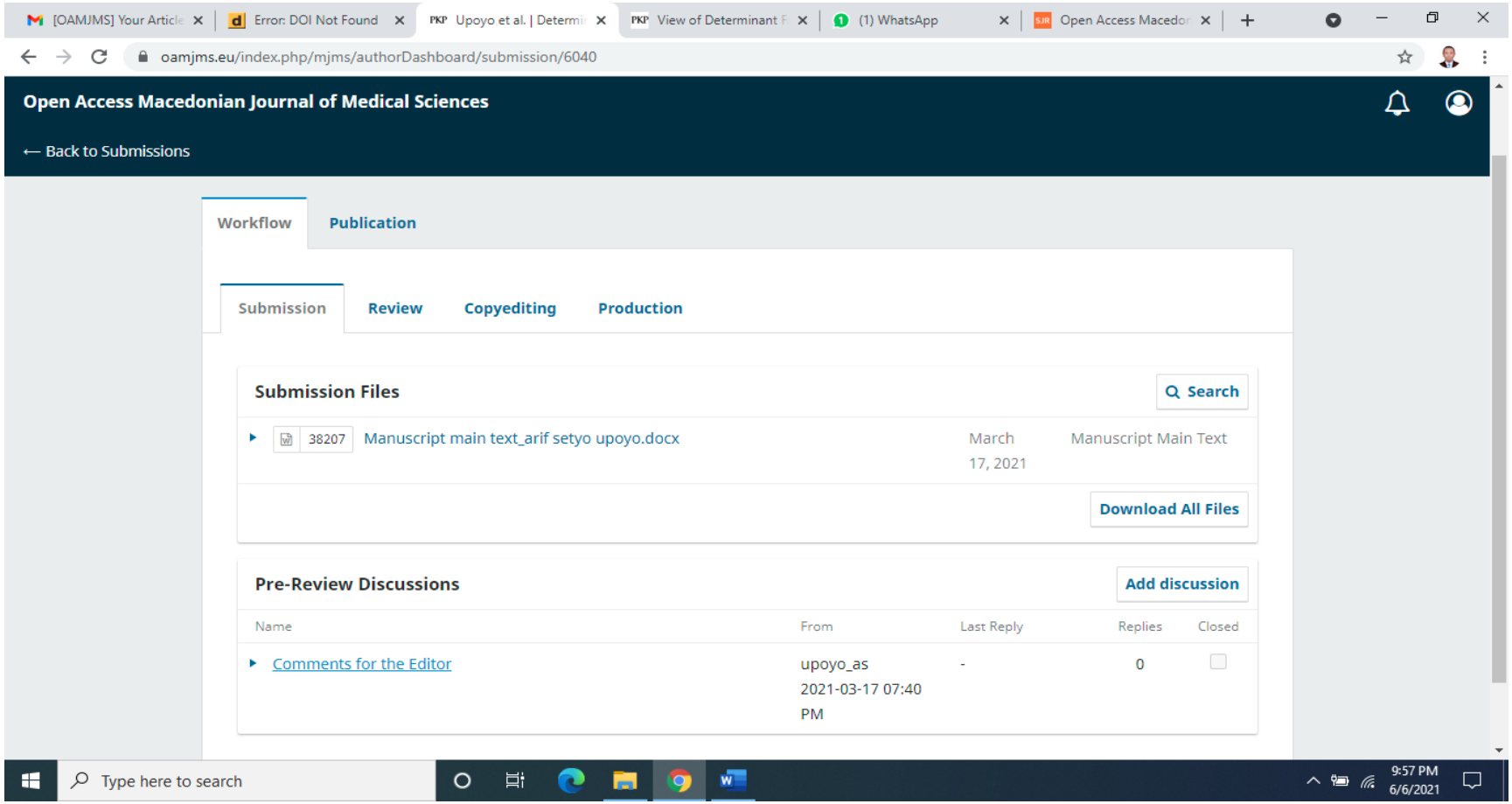

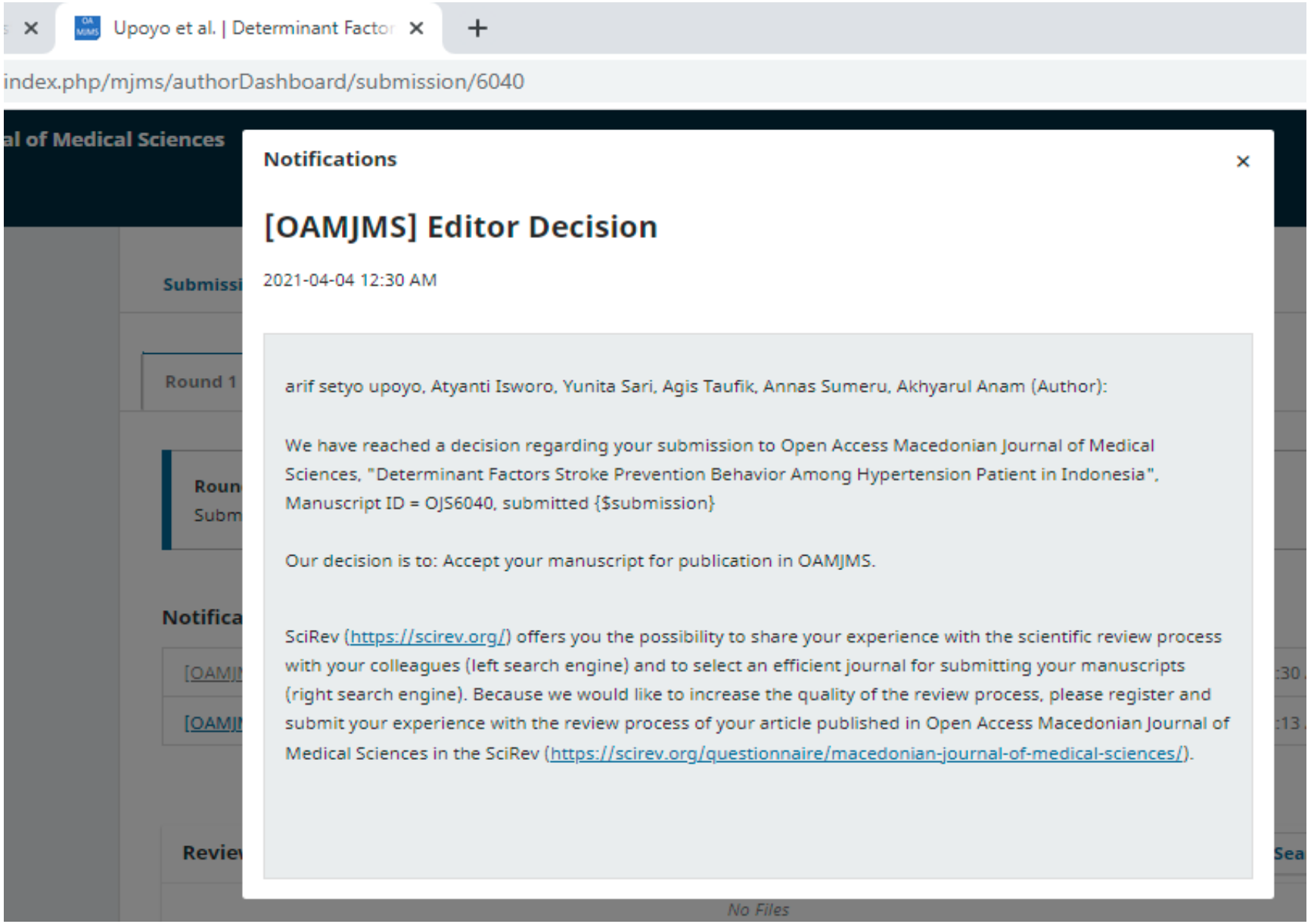
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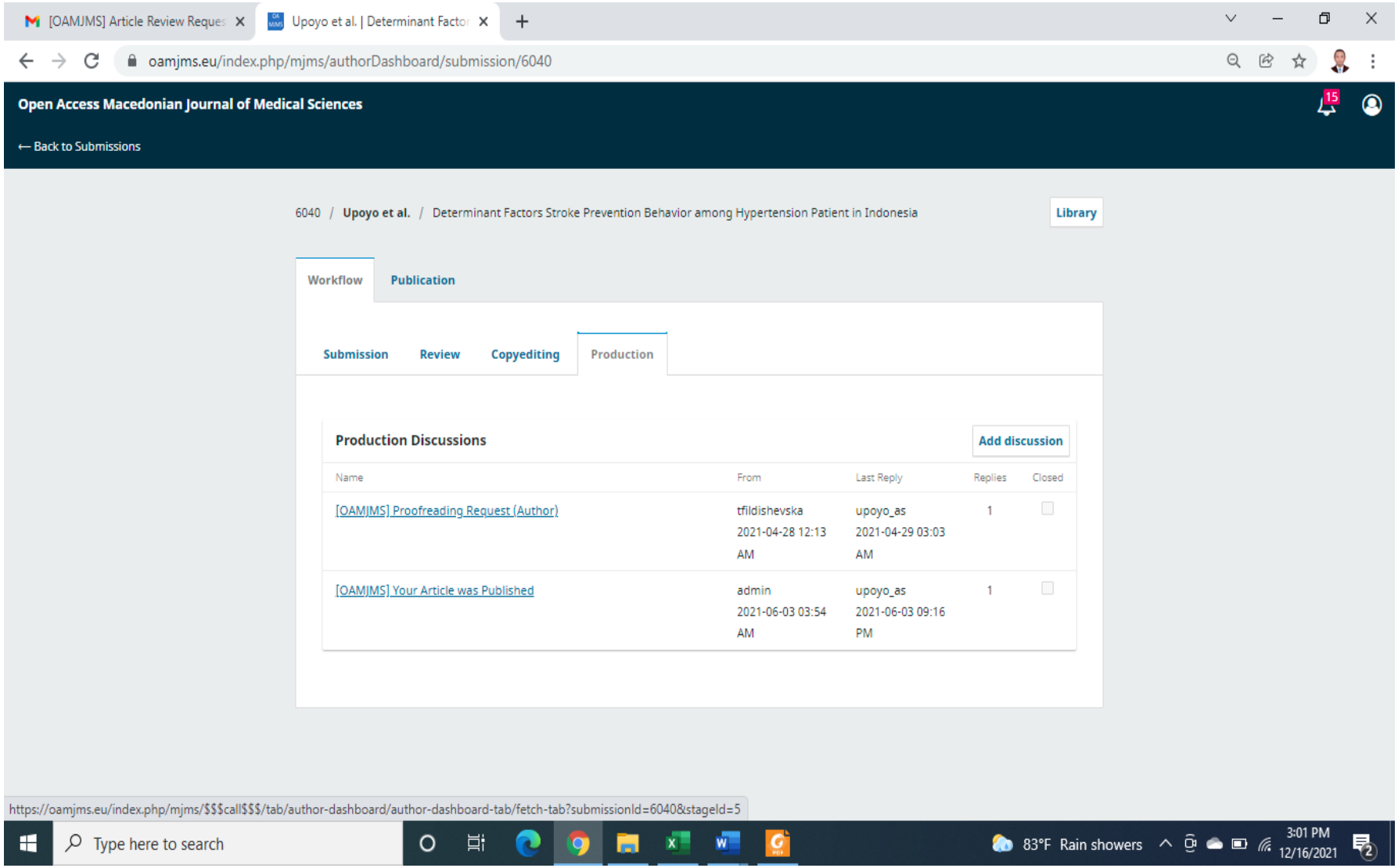
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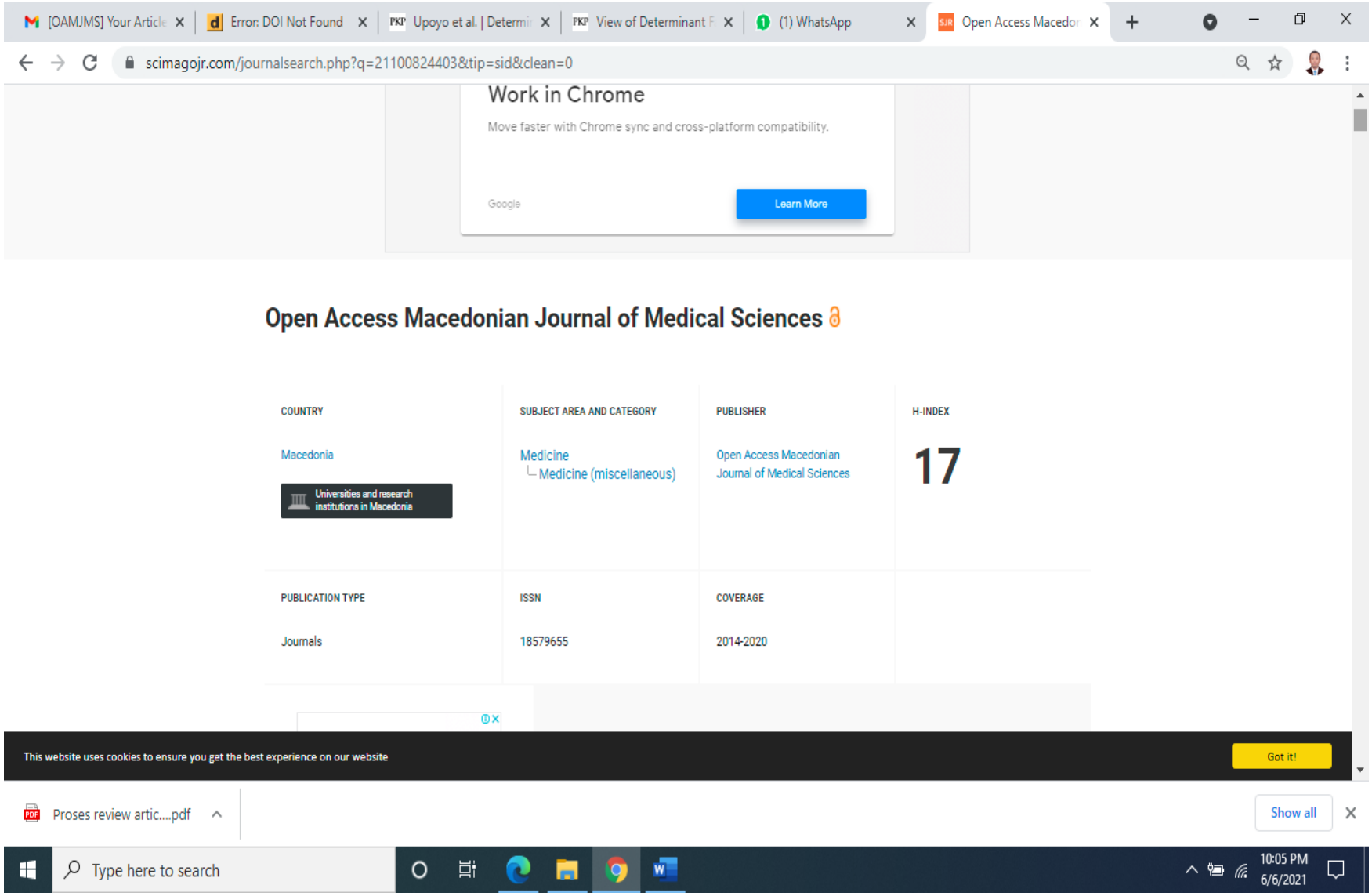
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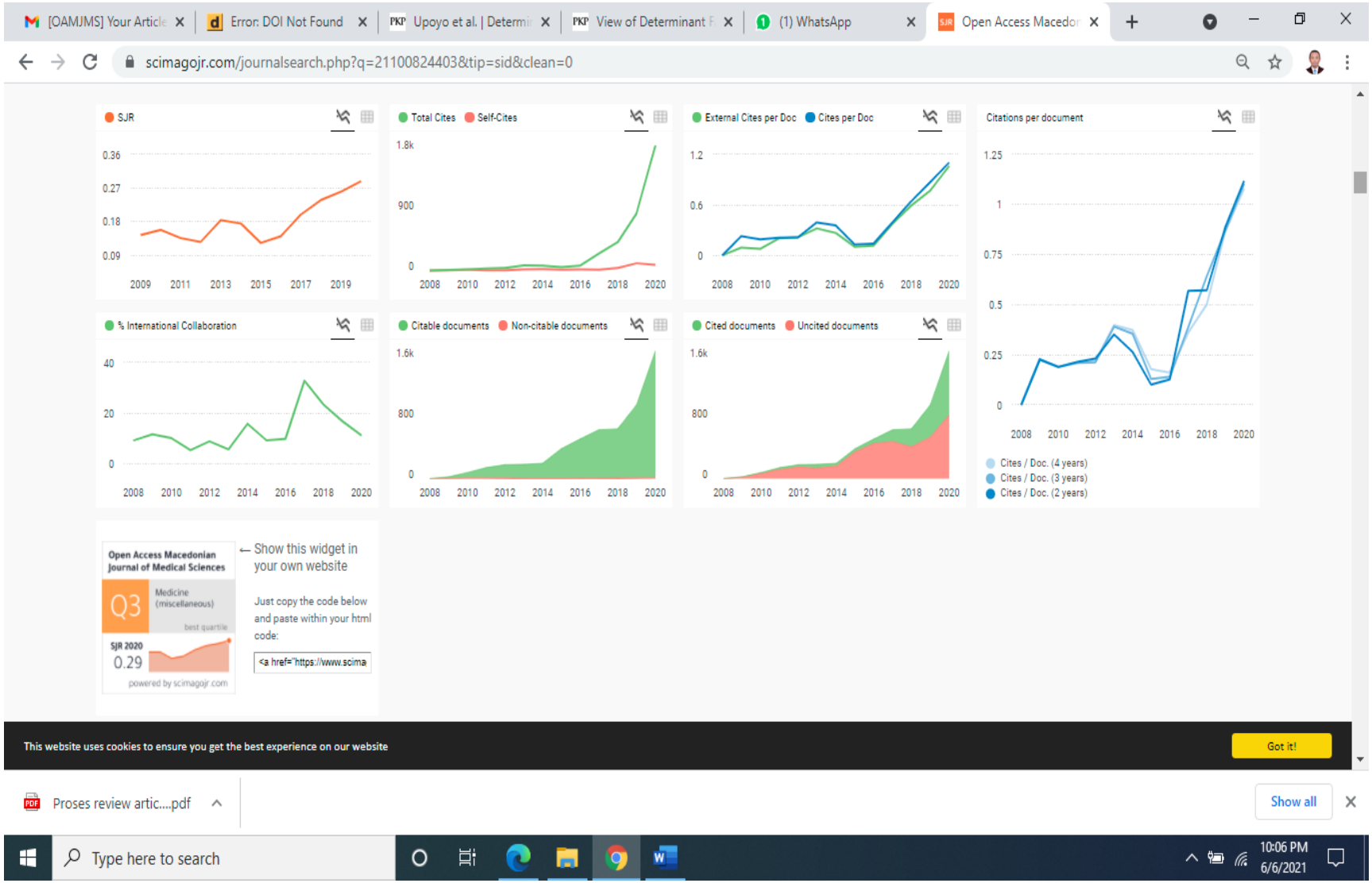
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Determinant Factors Stroke Prevention Behavior among Hypertension Patient in Indonesia

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Abstract

Stroke is the leading cause of death in the world and in Indonesia. Hypertension is a major risk of stroke. Modified stroke risk factors are behavioral factors. The purpose of this study is to identify the factors that influence stroke prevention behavior in hypertensive patients. The research method used cross sectional. Total participants were 461 hypertensive patients who came to Community Health Center. Sampling technique used consecutive sampling. The questionnaire used contains demographics, knowledge, self-efficacy, awareness of stroke risk, and stroke prevention behaviors which include diet, exercise, smoking, and drinking alcohol. Data analysis used Chi-square and logistic regression. The results showed that 65.7% of respondents showed poor stroke prevention behavior. Factors related to stroke prevention behavior include self-efficacy ($p = 0.048$; 95%CI = 1.01–2.22; OR = 1.5), perception ($p = 0.036$; 95%CI = 0.45–0.98; OR = 0.663), and awareness of stroke risk ($p \leq 0.001$; 95%CI = 2.255–6.333; OR = 3.779). The dominant factor influencing stroke prevention behavior in hypertensive patients is awareness of stroke risk.

Introduction

Stroke is a major health-care problem in South, East, and Southeast Asia. With a majority of the world's population living in the developing countries of these regions, the global burden of stroke will have the largest contribution from Asia [1]. The prevalence of stroke in Indonesia increases every year. Based on the 2013 Basic Health Research, the prevalence of stroke was 7 per thousand population, while in 2018, the prevalence of stroke was 10.9 per thousand population [2].

Risk factors for stroke include factors that cannot be modified and factors that can be modified. Factors that cannot be modified include age, sex, race/ethnicity, and genetics, while factors that can be modified include hypertension, diabetes, atrial fibrillation, dyslipidemia, diet, physical activity, obesity, metabolic syndrome, alcohol consumption, and smoking [3], [4], [5]. Risk factors for stroke that can be modified are influenced by patient behavior.

Hypertension is one of the main factors of stroke. Primary hypertension is a major cause of cardiovascular disease morbidity which has a significant influence on the incidence of stroke [6], [7]. Goldstein states that the prevalence of stroke in hypertensive patients aged 50 years is 20% with a risk ratio of 4 and the prevalence continues to increase with increasing age [8], whereas according to Ghani *et al.*, hypertension sufferers have a risk of 2.87 times getting a stroke [7].

The purpose of this study was to determine the factors that influence stroke prevention behavior in hypertensive patients.

Methodology

Design

The research method used cross-sectional study. The research was conducted in April–August 2019.

Sample

The subjects of the study were 461 participants of hypertension. Sampling technique used consecutive sampling from five public health centers in Banyumas Regency, Central of Java. Inclusion criteria of sample were hypertensive patient, >35 years old and visit to public health center. Exclusion criteria were hypertensive patients with complications and refused as a respondent.

Instrument

The questionnaire used contained demographics, knowledge, self-efficacy, awareness of stroke risk, and stroke prevention behaviors. Knowledge instrument modified from Hypertension Knowledge-Level Scale by Erkoc *et al.* [9] that divided into three categories: Low, middle, and high. Self-efficacy and awareness of stroke risk used numeric score 1–10, high score if above average, and low score if below or equal to average. Stroke prevention behaviors which included low salt and cholesterol diet, exercise, smoking, and drinking alcohol used Likert score 1–4, total score categorized good if the total score is more than average and bad if the total score is below or equal to average.

Data analysis

Data analysis used Chi-square for bivariate analysis and logistic regression for multivariate analysis with SPSS 16.

Results

Based on Table 1, it is known that the respondents are mostly female (80.9%), over 60 years old (56.8%), still married (71.4%), living together with family (49.9%), with income below the regional minimum wage (65.7%), and low education (70.9%). Respondent characteristics that significantly influence behavior include gender (p = 0.000; 95%CI = 7.12–22.28; OR = 12.59), age (p = 0.000; 95%CI = 0.24–0.56; OR = 0.369), marital status (p = 0.008; 95%CI = 1.17–2.89; OR = 1.83), and income (p = 0.008; 95%CI = 0.39–0.87; OR = 0.58). Female, old age, married, and low income have a tendency to behave badly in stroke prevention behavior.

Based on Table 2, it is known that the majority showed poor stroke prevention behavior (65.7%), high knowledge of hypertension (89.4%), low self-efficacy (56.2%), good perception (57.3%), information about low stroke (41.4%), and low stroke risk awareness (60.1%).

Factors related to stroke prevention behavior include self-efficacy (p = 0.043; 95%CI = 1.01–2.22; OR = 1.50), perception (p = 0.038; 95%CI = 0.45–0.98; OR = 0.663), and awareness of stroke risk (p = 0.000; 95%CI = 0.24–0.53; OR = 0.354).

The results of multivariate analysis showed that factors related to stroke prevention behavior were age, sex, efficacy, and awareness of stroke risk. The dominant factor influencing behavior is awareness of stroke risk with OR 3778.

Table 1: Characteristics of respondents

Characteristics of respondents	n	%	OR	95%CI	p
Sex					
Male	98	19.1	12.59	7.101–22.28	<0.001
Female	373	80.9			
Age					
<60 years old	199	43.2	0.369	0.24–0.56	<0.001
>60 years old	262	56.8			
Marital status					
Married	329	71.4	1.83	1.17–2.89	0.008
Not yet	132	28.6			
Living together					
Living alone	12	2.6	1.27	0.669–1.87	0.227
With couple	200	68.9			
With family	201	43.6			
Other	18	3.9			
Income					
Under minimum standard payment	303	65.7	0.58	0.39–0.87	0.008
Standard payment	28	5.2			
Upper minimum standard payment	134	29.1			
Level education					
No	40	8.7	0.807	0.39–1.83	0.551
Elementary	327	70.9			
Junior high school	57	12.4			
Senior high school	34	7.4			
High education	3	0.7			

Table 2: Stroke prevention behavior and associated factors

Variable	n	%	OR	95% CI	p
Stroke prevention behavior					
Good	158	34.3	-	-	-
Bad	303	65.7			
Knowledge					
Low	0	0	0.800	0.46–1.58	0.589
Middle	49	10.6			
High	412	89.4			
Self-efficacy					
Low	259	56.2	1.50	1.01–2.22	0.043
High	202	43.8			
Perception					
Bad	264	57.3	0.663	0.45–0.98	0.038
Good	197	42.7			
Information about stroke					
Low	191	41.4	1.19	0.811–1.768	0.368
Middle	126	27.3			
Good	144	31.3			
Stroke risk awareness					
Low	277	60.1	0.354	0.24–0.53	<0.001
High	184	39.9			

Discussion

Most respondents are female, the elderly, have low education, and earn below the regional minimum wage standard. The risk of hypertension increases with age. This is related to vascular changes that cause an increased peripheral resistance. Postmenopausal women increase the risk of developing hypertension due to hormonal changes. Low education and income can affect health behavior.

The result shows that the majority (65.7%) of hypertension patients had a poor stroke prevention behavior. The poor behavior is high consumption of sodium and fat and also lack of regular exercise. The factors that influence stroke prevention behavior in this study include perception, self-efficacy, and stroke risk awareness.

The majority of the respondents have poor perception and low self-efficacy in stroke prevention. Perception and self-efficacy can influence behavior. Imprecise perception in stroke prevention and low self-efficacy will inhibit stroke prevention behavior [10].

One of the factors that influence perception is information. In this study, we obtained bad perception

AQ6 **Table 3: Multivariate analysis results (n = 461)**

Variable	Wald	Sig.	Exp	95% CI	
				Min.	Max.
Sex	3.309	<0.001	0.072	0.037	0.139
Age	3.261	<0.001	2.589	1.537	4.335
Marital status	3.227	0.218	0.869	0.353	1.369
Income	3.260	0.402	0.948	0.549	1.574
Stroke risk awareness	3.263	<0.001	3.779	2.255	6.333
Perception	3.263	0.373	1.301	0.604	3.169
Self-efficacy	3.261	<0.001	0.373	0.222	0.617
Living together	3.276	0.860	1.038	0.603	1.790

and information about stroke (41.4%). Plenty of information can affect or increase someone's knowledge and with knowledge creates awareness that eventually someone will behave in accordance with the knowledge they have.

Self-efficacy is an important precondition for successful self-management. Many studies have shown that self-efficacy is the strongest determinant of smoking cessation, increasing physical activity, and healthy diet [11], [12], [13]. Thus, increasing self-efficacy is an effective method to support healthy behavioral change in patients with stroke.

Respondents also indicated that the majority has a low stroke risk awareness. Many patients are not aware that hypertension is a risk of stroke so they ignore stroke prevention behavior. This is in line with the research of Hertz *et al.* which stated that 7.6% had the chance to become stroke, 46.4% had no chance to become a stroke, and 46.0 were unsure [14]. These findings indicate that self-awareness about stroke risk is poor. This disease attitude can inhibit efforts to raise awareness about stroke in society.

Most people think that stroke is more serious than heart attack. However, because stroke symptoms appear in variety of ways, they are not easily recognized. People with stroke report that they are confused by the symptoms such as migraine-like, headache, ear disease, or food poisoning. This kind of confusion can be one of the causes of delays to the hospital. Studies suggest that myocardial infarction patients with atypical symptoms lead to increased delay in many patients [15], [16]. Dracup *et al.* found the people who thought that they were simply having gas discomfort or indigestion significantly delayed seeing a doctor [17]. This study also revealed that people who had a low stroke self-awareness had a 3.78 times risk of having poor stroke prevention behavior. Therefore, increasing public awareness about the risk of stroke is an important factor in the stroke risk patients management.

Conclusion

Most respondents stroke prevention behaviors are bad. Respondent characteristics that significantly influence behavior include gender, age, marital status, and income. Factors related to stroke prevention behavior include self-efficacy, perception, and awareness of stroke risk. The dominant factor influencing behavior is awareness of stroke risk. It is necessary to intervene to increase stroke prevention behavior in risk groups by increasing self-efficacy, perception, and awareness of stroke risk.

Acknowledgments AQ3

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Ethical Aspect and Declaration of Interest Statement

The study has been declared ethical by the Dr. Moewardi Hospital's health research ethics commission number: 789/VI/HREC/2019. Informed consent was given to the participants before study.

Authors' Contributions

Concept and study design (Upoyo, Sari, Isworo), data collection, data analysis and interpretations (Taufik, Sumeru, Anam), processing the draft of the manuscript (Upoyo, Isworo), critical revision of the manuscript (Sari, Upoyo, Isworo), and article finalization (Upoyo, Isworo).

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