

# Analysis of Behavioral Factors on Medications in Gout Patients with Health belief Model Theory

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## Analysis of Behavioral Factors on Medications in Gout Patients with Health belief Model Theory

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### Abstract

Objective: To identify behavioral factor associated with medication adherence using the Health Belief Model theory. Methods: This study used a cross sectional approach with accidental sampling technique. The number of samples used 64 people. The instruments were used the adherence to refills medication scale and the Health Belief Model questionnaire which had been tested for validation and reliability on the questionnaire. Data were analysed using multiple linear regression analysis. Conclusions: Each Health Belief Model theory variables which are perceived susceptibility, perceived severity, perceived benefits, and perceived barriers had a significant effect on medication adherence in gout patients ( $p < 0.05$ ) except self-efficacy had no significant effect ( $p > 0.05$ ). The Health Belief Model Theory had coefficient determination ( $R^2$ ) 59.7%. This indicates that the Health Belief Model can predict the behavior of patients who adhere to treatment well.

**Keywords:** Adherence, Health Belief Model, Gout, Community Health Center, Behavior.

### Introduction

Gout is a disease that occurs due to an increase in uric acid levels that are deposited into monosodium urate crystals around the joints and other organs [1]. Gout is one of dangerous diseases, because it not only affects patient's health but can also cause physical disabilities [2]. The prevalence of gout has increased which correlates with economic developments related to diet and lifestyle.

The prevalence of gout in the world has increased over time, especially in developed countries such as North America and Europe [3]. Based on data from the World Health Organization in 2018, the prevalence of gout arthritis around the world was 34.2% [4].

The increase in the incidence of gout did not only occur in developed countries, but also in developing countries, one of which was Indonesia. In 2013 the incidence of gout in Indonesia was 11.9%, the prevalence based on gender, showed 8.5% on women and 6.1% on men, while the prevalence of gout in East Java was 17% [5]. There were 4937 cases of gout in Malang City in 2019, both on elderly

and pre-elderly patients [6]. The goals of gout treatment are to reduce the concentration of uric acid levels, prevent recurrence of attacks, reduce pain, maintain joint function and prevent paralysis [7]. Gout is often associated with quite high morbidity but if gout patients adhere to the treatment it will be good for their health [8].

Improved quality of life is also affected by changes in lifestyle and healthy behaviour [9]. Adherence to prescribed medications is important for the management of chronic diseases, including gout [10]. Study conducted by Scheepers *et al* (2018) found that out of 57% of gout sufferers who received allopurinol therapy only 10.3% of them were adhering to their treatment, and within 6 months 70% of non-adherent gout patients would return to seek treatment [11]. In this study, the Health Belief Model theory approach is used because the Health Belief Model can explain a person's behavior towards medication adherence.

Health Belief Model is a belief model in individuals in determining behavior and

attitudes to do or not do health behavior [12]. According to the Health Belief Model, people change their habits when they know that the disease is serious. If they don't, they probably won't choose healthy behaviors [13].

The theory of the Health Belief Model has six constructs, which are susceptibility to gout (perceived susceptibility), patient perceptions of the severity of gout (perceived severity), perceived benefits of patients when adhering to treatment (perceived benefits), barriers to treatment adherence (perceived barriers), changing behavior that is caused by something (cues to action), and the patient's confidence to treatment adherence (self-efficacy) [14].

## Material and Methods

This study used cross-sectional analytic observational method. A sample of 64 respondents selected based on inclusion criteria used accidental sampling technique. Data collection was carried out at Arjuno Health Center during June 2020. The modified Adherence to Refills Medication Scale (ARMS) questionnaire and the Health Belief Model questionnaire were used as research instruments.

The questionnaire also contains questions related to the demographic data of the respondents. Both questionnaires used have passed validation and reliability tests. The variables studied were perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy

towards adherence to drug use in gout patients. Data were analyzed statistically using multiple linear regressions.

## Statistical Analysis

The data were inputted into excel then exported and analyzed using SPSS V.23. Demographic data were analyzed using descriptive statistics (frequency and percentage). Chi square test was done to see adherence on respondent characteristics. Respondents' adherence to the Health Belief Model was analyzed using multiple regression models with standard errors of 95%. The significance value used is  $p < 0.05$ .

## Ethical Clearance

Ethical clearance has been obtained based on the approval issued by the Health Research Ethics Commission of the University of Muhammadiyah Malang. (No.E.5.a/152/KEPK-UMM/VII/2020)

## Results

64 respondents were included in the inclusion criteria. Most of the respondents are female (59%) divided into age ranges (31-40 years 6%, 41-50 years 20%, 51-60 years 47%, 61-70 years 24%, 71-80 years 3%). Most of the respondents work (52%). Respondents highest education level was high school (40%) while those who have tertiary education (8%). Most of the respondents had good adherence (55%) than those who were not (45%). Data on respondent's demographic characteristics shown in Table 1.

Table 1: Description of Respondents Characteristics

| Characteristics |                    | N  | %   |
|-----------------|--------------------|----|-----|
| Adherence       | Adhere             | 35 | 55% |
|                 | Not adhere         | 29 | 45% |
| Gender          | Male               | 26 | 41  |
|                 | Female             | 38 | 59  |
| Age             | 31 – 40 years      | 4  | 6   |
|                 | 41 – 50 years      | 15 | 24  |
|                 | 51 – 60 years      | 30 | 47  |
|                 | 61 – 70 years      | 13 | 20  |
|                 | 71 – 80 years      | 2  | 3   |
| Work            | Working            | 33 | 48  |
|                 | Unemployed         | 31 | 52  |
| Education       | Primary School     | 14 | 22  |
|                 | Junior High School | 19 | 30  |
|                 | High School        | 26 | 40  |
|                 | Diploma/University | 5  | 8   |
| Duration        | <2 years           | 25 | 39  |
|                 | >2 years           | 39 | 61  |

Table 2 shows the associations between the respondents' demographics and comments. Based on gender, men were more adherent than women (62%, 16/26 vs 53%, 20/38). Based on age, age adherent ranged from 31-40 years (75%, 3/4) and 71-80 years (100%,

2/2). Education levels that have good considerations are primary school (61%, 9/14) and high school (62%, 16/26). Respondents who had gout <2 years were more adherent (61%, 16/25) than those who had gout longer than 2 years (51%, 20/39).

**Table 2: Association between respondents' demographics to adherence**

| Characteristics |                    | Not adhere n (%) | Adhere n (%) | Total n (%) | Significance value |
|-----------------|--------------------|------------------|--------------|-------------|--------------------|
| Gender          | Male               | 10(38)           | 16(62)       | 26(100)     | 0.134              |
|                 | Female             | 18(47)           | 20(53)       | 38(100)     |                    |
| Age             | 31 – 40 tahun      | 1(25)            | 3(75)        | 4           | 0.000              |
|                 | 41 – 50 tahun      | 7(47)            | 8(53)        | 15          |                    |
|                 | 51 – 60 tahun      | 14(47)           | 16(53)       | 30          |                    |
|                 | 61 – 70 tahun      | 6(46)            | 7(54)        | 13          |                    |
|                 | 71 – 80 tahun      | 0(0)             | 2(100)       | 2           |                    |
| Work            | Working            | 16(48)           | 17(52)       | 33          | 0.803              |
|                 | Unemployed         | 12(39)           | 19(61)       | 31          |                    |
| Education       | Primary School     | 5(36)            | 9(64)        | 14          | 0.012              |
|                 | Junior High School | 10(53)           | 9(47)        | 19          |                    |
|                 | High School        | 10(38)           | 16(62)       | 26          |                    |
|                 | Diploma/University | 3(60)            | 2(40)        | 5           |                    |
| Duration        | <2 years           | 9(36)            | 16(64)       | 25          | 0.080              |
|                 | >2 years           | 19(49)           | 20(51)       | 39          |                    |

In this study, significance value of perceived susceptibility resulted in ( $p = 0.014$ ), people who adhere to treatment have a good level of perceived susceptibility. In terms of perceived severity has a significant effect on treatment adherence ( $p = 0.002$ ), good perceived severity encourages individuals to adhere to treatment. Perceived benefits factor had a

significant effect on treatment adherence ( $p = 0.013$ ) including the Perceived barrier factor also had a significant effect on treatment adherence ( $p = 0.000$ ). Only the self-efficacy factor did not have a significant effect on adherence ( $p = 0.128$ ). Table 3 shows the association of adherence to the health belief model factor.

**Table 3: Adherence association to health belief model factor**

| Variable              | Not adhere | Adhere  | Total | Significance value |
|-----------------------|------------|---------|-------|--------------------|
| <b>Susceptibility</b> |            |         |       | 0.014              |
| Very good             | 22(55)     | 18 (45) | 40    |                    |
| Good                  | 6 (25)     | 18 (75) | 24    |                    |
| Not bad               | 0          | 0       | 0     |                    |
| Bad                   | 0          | 0       | 0     |                    |
| <b>Severity</b>       |            |         |       | 0.002              |
| Very good             | 16(41)     | 23(59)  | 39    |                    |
| Good                  | 5(22)      | 20(80)  | 25    |                    |
| Not bad               | 0          | 0       | 0     |                    |
| Bad                   | 0          | 0       | 0     |                    |
| <b>Benefits</b>       |            |         |       | 0.013              |
| Very good             | 16(73)     | 6(27)   | 22    |                    |
| Good                  | 12(29)     | 30(71)  | 42    |                    |
| Not bad               | 0          | 0       | 0     |                    |
| Bad                   | 0          | 0       | 0     |                    |
| <b>Barrier</b>        |            |         |       | 0.000              |
| Very good             | 6(86)      | 1(14)   | 7     |                    |
| Good                  | 17(40)     | 25(60)  | 42    |                    |
| Not bad               | 5(33)      | 10(67)  | 15    |                    |
| Bad                   | 0          | 0       | 0     |                    |
| <b>Self-efficacy</b>  |            |         |       | 0.128              |
| Very good             | 21(49)     | 22(51)  | 43    |                    |
| Good                  | 7(33)      | 14(64)  | 21    |                    |
| Not bad               | 0          | 0       | 0     |                    |
| Bad                   | 0          | 0       | 0     |                    |

## Discussion

Adherence to the prescribed medication is important for the management of chronic diseases, including gout, because the long-term effectiveness of the drug is substantially clear [10]. Adherence to the prescribed medication is important for the management of chronic diseases, including gout, because the long-term effectiveness of the drug is substantially clear. Medication adherence is essential in gout management. Medication adherence affects the disease progression and the risk of complications [15].

In this study, 55% of respondents adhered to their treatment compared to 45% who did not adhere to their treatment. This research is in accordance to *Martini et al.* who found that 79% of gout patients were adherent to treatment based on self-reports [16]. Based on gender, men were more adhere than women (62% vs 53%).

Several studies have found that men are more adherent than women are less likely to adhere to treatment [11, 17]. Older age range 71-80 years has good medication adherence. The level of education that has fairly good adherence is primary school (62%) and high school (61%). This study is in line with Sheng's research which states that good adherence is at the high school and primary school levels [18]. Older age range 71-80 years has good medication adherence. The level of education that has fairly good adherence is primary school (62%) and high school (61%).

This study is in line with Sheng's research which states that good adherence is at the high school and primary school levels. Adherence of these respondents is also affected by knowledge and perceptions of gout patients. Perception is a factor that influences medication adherence because patients see gout as a chronic condition that must be treated [19, 20]. This study shows the results of factors associated with adherence, Health Belief Model factor, which is related to the patient's perception of the disease that makes the patient adhere to the treatment. Based on the Health Belief Model, this study shows that the results of the five component factors studied are only one factor that does not affect adherence, which is self-

efficacy. The results of this study are not in line with the research in Shanghai by Shao et al. which shows that self-efficacy is the highest factor in influencing adherence because the perception of high self-efficacy causes them to be aware of their disease condition and can motivate them to recover [21].

Four factors that affect medication adherence are perceived susceptibility, perceived severity, perceived benefits have a significant factor in influencing medication adherence [22]. The results of this study indicate a high level of adherence is in line with the high perception of seriousness regarding the risk of disease complications; this is in accordance with previous studies that the perception of seriousness is the main factor that can change medication adherence to chronic diseases such as diabetes, hypertension, and coronary heart disease [23, 24, 25, 26].

The low perception of barrier is needed to increase patient's adherence. The results of this study indicate that the perception of the barrier is low so that it makes a person obey and vice versa [27, 23]. This research is in line with Singh's research, which states that perceived susceptibility makes a person afraid of the disease and forces gout patients to adhere to treatment [28]. This can be the reason for the fairly high level of non-adherence to medication of respondents in this study, where increase in self-efficacy is needed.

## Conclusion

In this study, it was found that the treatment adherence to gout patients was quite good (55%). Demographic factors associated with adherence to this study were age and education. In Health Belief Model, factors that have an influence on treatment adherence in gout patients are perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Self-efficacy factor does not have a significant effect on medication adherence. In the future, this research can be used as information to improve medication adherence to gout patients.

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PAGE 3

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PAGE 6

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