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The Use *of Theory of Planned Behavior* Framework in Improving Self-Adherence of Rheumatoid Arthritis Patients

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ABSTRACT

Rheumatoid Arthritis (RA) is a chronic disease that requires sufferers to have self-adherence in carrying out treatment. Unfortunately, initial interviews with RA sufferers showed that there were still many of them who lacked self-adherence, which resulted in the worsening of their health condition. This study aims to improve self-adherence RA patients through the Theory of Planned Behavior (TPB) framework which is designed to be an outreach activity. The counseling is carried out in one day and is divided into 3 sessions, each session having a duration of 20 to 40 minutes. Participants in the study were 12 members of the Sahabat Rheumatoid Arthritis (SAHARA) community who were RA sufferers as well as agents of change for other RA sufferers who had not yet joined the community. The results showed that the participants experienced a significant increase in self-adherence ($p = 0.005 < 0.05$). These results prove that counseling activities designed using the Theory of Planned Behavior framework can increase self-adherence of Rheumatoid Arthritis sufferers in undergoing treatment.

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BACKGROUND

Indonesia as a developing country experienced an increase in mortality caused by chronic diseases. This increase in numbers is generally due to lack of knowledge, awareness and absence of changes related to unhealthy lifestyles. Chronic disease itself is a disease that lasts for a long time and requires intensive treatment for a long period of time (Kartini et al., 2014). One type of chronic disease is *Rheumatoid Arthritis* or what is hereinafter referred to as RA (Yazdany et al., 2016). Of the many types of rheumatic diseases, RA is the most common rheumatic disease affecting the community (Uhlig et al., 2014).

The Health Research and Development Agency of the Ministry of Health of the Republic of Indonesia has conducted basic health research and produced data that the prevalence of joint diseases one of which is RA based on the diagnosis of health workers or symptoms is 24.7 percent with the highest prevalence in East Nusa Tenggara (33.1%), followed by West Java (32.1%), Bali (30%), and East Java (26.9%). By age group, the prevalence of joint disease is most common among individuals older than 75 years (54%), while for other age groups it is 15-24 years (7%), 25-34 years (16.1%), 35-44 years (26.9%), 45-54 years (37.2%), 55-64 years (45%), 65-74 years (51.9%) (*Riskesdas 2013*, n.d.) .

Rheumatoid Arthritis (RA) is a disease caused by the human immune system or can also be known as autoimmune attacks that attack the joints (N. L. Xu et al., 2017). RA makes sufferers physically limited as a result of the erosion of joints in the body and persistent pain (Al-rubaye et al., 2017; Kostova et al., n.d.). During his life, people with RA can feel several symptoms, including joint pain for six weeks or more, stiff joints every morning with a duration above 30 minutes and other systemic symptoms such as anorexia and fatigue (Principles et al., 2018; Singh et al., 2012). The pain felt by people with RA can last significantly for 5 years from the time he was first diagnosed with RA (Ryan & McGuire, 2016) Limited physical activity experienced by sufferers due to perceived pain can affect the quality of life of the ra sufferer itself (Malm et al., 2017). RA can be caused by the presence of several factors, including genetics, age, gender, income level, and lifestyle (Brennan-Olsen et al., 2017; Kostova et al., n.d.; Malm et al., 2016; B. Xu & Lin, 2017). In addition, research conducted by Thomsen and colleagues revealed that individuals who spend a lot of time in sedentary positions such as sitting too long or lying down for too long can increase the risk of developing RA (Thomsen et al., 2015).

The fact that RA disease is one of the diseases that cannot be cured, makes people with RA have to fight harder to accept the condition experienced (Kostova et al., n.d.). Not only acceptance of the disease, sufferers can also feel depression that can affect his ability to achieve remission status (Inanc et al., 2014). Then social support can also help people with RA to reduce pain and fatigue experienced (N. L. Xu et al., 2017). It is also in accordance with research conducted by McCarron that social support has a positive effect on quality of life related to health (*health-related quality of life*) (Mccarron, 2015)

The importance of the role of social support for people with chronic diseases, especially RA, makes the SAHARA community stand. The SAHARA community or Sahabat *Rheumatoid Arthritis* serves as a forum for people with RA to communicate, exchange information and thoughts and as a means of getting social support. Dynamics within SAHARA are certainly diverse, various problems such as self-acceptance and *self-adherence* also appear. People with RA have a list of drugs that must be taken to prevent inflammation in the bones getting worse and relieve pain felt due to inflammation or

inflammation that is happening. To slow the progression of disease and structural damage to joints, people with RA use conventional drugs such as *Disease Modifying Antirheumatic Drugs* (DMARDs). People with RA also take *Non-Steroidal Anti Inflammatory Drugs* (NSAIDs) to reduce inflammation (Guo et al., 2018). These drugs must be taken in accordance with the doctor's prescription and advice. Although not all people with RA must take drugs with a large type or amount, but at least every patient must have one drug that must be routinely taken even though he has reached the stage of remission (signs of rheumatic disease disappear partially or completely). In addition, people with RA are also recommended to maintain food patterns and routine control to a specialist to reduce inflammation relapse or getting worse.

Initial interviews with RA sufferers who are members of the SAHARA community showed that people with RA perform *non-adherence* behavior in carrying out routine control, maintaining diet and taking medication. Researchers decided to use the *Theory of Planned Behavior* framework developed by Ajzen and Madden in 1986 to examine this *non-adherence* behavior.

The Theory of Planned Behavior (TPB) is one of the most widely applied theoretical models and has been shown to be effective in predicting a wide range of health intentions and behaviors (Rich et al., 2015). *The theory of planned behavior*, which will then be called TPB, has 3 main components, namely *attitude towards the behavior* (individual belief in the possible outcome of a behavior and evaluation of the results that have been done by the individual), *subjective norms* (individual beliefs about normative expectations of others and motivation or desire to adhere to those expectations) and *Behavioral control* (the belief that the individual is capable of certain behaviors) (Ajzen, 2020).

When associated with the phenomenon that occurs in sahara, in *the attitude towards the behavior* component, patients have a *belief* or belief that control behavior to specialists, complying with the prohibition / advice of medical personnel and taking regular medication is not important. This is due to the absence of negative consequences that are directly obtained or felt by patients when ignoring advice / abstinence, not regular control and taking irregular medications. The presence of positive reinforcement such as cost savings when not controlled to the doctor also strengthens *non-adherence behavior*. The existence of negative consequences and positive reinforcement is in accordance with the behavioristic theory proposed by B. F. Skinner, namely the consequences obtained on a behavior can strengthen or weaken the behavior (Bąbel, 2020). This process eventually results in an *attitude* towards behavior that is not routine control to the doctor and violates the abstinence of medical personnel.

In *the subjective norms'* component, patients can see the behavior of those around them that are letting and tend to forgive when patients do not take regular medication, do not comply with the advice of medical personnel and control to the doctor only as necessary. This leads to *a belief* for patients that their non-compliance is not a problem. Plus, most RA patients do the same thing, which is non-compliance behavior. This process forms a *subjective norm*, which is "Obeying the advice of medical personnel is not something important". In this case, ra patients learn from an environment that becomes a *live model* for them to carry out non-compliance behavior.

In the last component of TPB, namely *behavioral control*, internal and external

control of the patient is very influential for the behavior that will arise. In the phenomenon in the SAHARA community, on the *internal control* side, patients feel that taking medication when relapsed alone is enough. Not only that, but patients also feel that complying with the prohibition or advice of medical personnel will only limit their freedom. In this case, it appears that the patient has *irrational beliefs* that make him perform non-compliant behaviors. This is in accordance with the cognitive theory proposed by Albert Ellis about the basic principle of cognitive, namely *irrational belief* which is the key to emotional and behavioral disorders (Turner, 2016) While on *external control*, long queues when going to control, especially for BPJS users make *non-adherence* behavior more enduring. In this case, fatigue due to waiting in line is a negative consequence obtained when the patient goes to the control to the doctor. As a result of these negative consequences, control behavior to the doctor routinely becomes unsuasible. This process also gives rise to *behavioral control* in the form of patient modifying drugs, control only when relapsed and eat foods that are fried (eating abstinence foods).

This study aims to increase *the knowledge (knowledge*) of rheumatoid arthritis sufferers and raise awareness about the importance of obedient behavior that can lead to a positive attitude towards taking drugs and obeying the prohibition until the emergence of obedient behavior in carrying out treatment.

RESEARCH METHODS

Type of research

Quantitative approaches with experimental quasi methods were selected in this study. In this method the grouping of participants is not randomly selected (Psychology & Mada, 2019). The experimental design used is *one group pretest-postest design* , which is a study participant consisting of one group that will be measured before and after treatment (Psychology & Mada, 2019)

Research Subjects

The study subjects were members of the SAHARA Surabaya community of 12 people aged 21 to 63 years. The selection of research subjects is based on the criteria of study subjects, namely people with RA and the hope that members of the SAHARA community can become *agents of change* for patients with RA around those who have not joined the community.

Data Collection Methods

There are three data that will be collected in this study, namely evaluation in aspects of knowledge, attitudes, and behavior. Evaluation of learning aspects of knowledge aims to find out what knowledge or abilities are obtained by participants during the extension process. Evaluation of learning is carried out to see the success of the speaker in conveying the contents of the extension and achieving the goals of the extension itself. The evaluation of learning will be done using questions to measure knowledge about *Rheumatoid Arthritis* compiled based on analysis from the initial interview. From the process, researchers get four questions to measure pserta knowledge about RA, namely knowledge of RA in general (what is *Rheumatoid Arthritis*), the treatment function carried out (what is the function of the drugs that have been consumed), various things that become abstinence of RA sufferers, and ways that are done to reduce symptoms or complaints that are felt.

Evaluation of compliance attitudes of *Rheumatoid Arthritis* patients was measured using a scale called *The Rheumatology Compliance Questionnaire* (CQR) by de Klerk et al., in 1999. There are two dimensions in

this measuring tool, namely *Positive Approach to Adherence* and *Negative Approach to Adherence which are divided into* 19 items. This measuring tool has 4 answer options in the form of *likert* scales from 'Strongly Disagree' to 'Strongly Agree'. CQR has good reliability which reaches 0.71. The way this measuring tool scores is by summing each items, minus 19 and divided by 0.57. The higher the score obtained, the more it showed compliance behavior.

In addition, there is also a behavioral evaluation that aims to see how extension participants utilize the knowledge and / or abilities that have been obtained from counseling into everyday life. The evaluation is carried out two weeks after the extension activity is given by interview based on *the action plan* that has been made. The evaluation took a sample of 6 people from the extension participants, some family members of the participants, as well as members of the SAHARA community who did not follow the extension.

Intervention Procedures

Research begins with *pretesting*. After that, the research continued with the provision of interventions in this case designed into an extension activity by combining several methods such as lectures, question and answer, discussions, games, and *audio-visuals* to optimize the delivery of material. The provision of modules is also carried out to facilitate participants in understanding the material. The module is created by the researchers themselves under professional guidance. Counseling is provided using TPB analysis of *non-adherence* behavior obtained from preliminary interview data.

Counseling is done in one day and divided into three sessions. Each session has a duration of 20 to 40 minutes that has a different purpose. The first session aims to provide an understanding of RA in general, the function of drug administration and abstinence. The second session aims to build awareness about the importance of having a compliant attitude in the ra treatment process. The last session or the third session aims to encourage participants to make plans and commitments in developing an obedient attitude. Then the research will end with the retrieval of data back (*posttest*).

Table 1. Each Session Extension Material

Voice	Materials / Activities	Purpose
Opening	• Introductions and explanations of the purpose of counseling. • Pretest filling. • *Ice Breaking*.	• Establish *a rapport* between participants and speakers. • Knowing *the baseline* of participants' knowledge of RA and participants' attitudes regarding compliance behavior. • Dilute the atmosphere between the speaker and the participant. Also, so that participants are ready to follow the extension.
1	• Explanation of RA disease in general and the function of drugs in general. • Discussions related to suggestions and restrictions that have been obtained from medical personnel and drugs taken regularly.	• Invite participants to better understand about RA more deeply and the function of drugs taken. • Build empathy from each participant on the advice of doctors received by each ra sufferer

Voice	Materials / Activities	Purpose
	• Explanation of compliance in general. • Reflection on the violations that have been committed and the background of the violation.	• Invite participants to understand more about compliance more deeply. • Encourage participants to conduct analysis related to their respective compliance behaviors.
2	• Explanation of the impact or consequences of not taking medication / not controlling to the doctor regularly / eating abstinence / not exercising. • Discussion of the impact that has been felt • Video *playback* about exercise that can be done for RA patients and can be done at home. • Explanation of prescriptions or how to make healthy foods is practically specific to RA patients.	• Participants know the impact of non-compliant behavior. • Provide an understanding of the impact felt by fellow RA sufferers • Provide information about activities that are easy and can be done by people with RA. • Provide information that there are practical and delicious food recipes that can be cooked by people with RA.
3	• Explanation of *the action plan*. • The activity of creating *an action plan*.	• Provide information about the definition, how to create, and the importance *of the action plan*. • Encourage participants to make plans that can be applied in everyday life at home based on information that has been obtained from counseling.
Closing	• Evaluation and filling *post-test*.	• Get a comparison between the *baseline* and the result after counseling. • Involving participants to summarize the contents of the extension material to be more remembered by participants.

Data Analysis Techniques

Data analysis is done with the help of IBM SPSS program version 22 and uses *paired sample t-test* analysis method for evaluation of compliance attitudes then *wilcoxon signed-rank test* for knowledge evaluation. The existence of abnormal distribution of data on knowledge evaluation data makes researchers must use *the wilcoxon rank test* method. But both methods are used to determine the difference in conditions before and after being given treatment from the same group.

RESEARCH RESULTS

The study stems from an initial interview conducted over the past week *online* by adjusting the participants' free time. Online interviews are conducted with consideration of differences in busyness in each participant. The interview was conducted once with each participant. The interview resulted in data being grouped into a needs analysis based on expectations, reality, gaps, and causes to facilitate intervention determination. Table 2 below illustrates the characteristics of study participants consisting of age, gender, and educational background.

Table 2. Characteristics of Research Participants

Characteristic	Frequency	*Presented*
Age		
21 - 40 years old (early adulthood)	8	66,6
41 - 65 years old (associate adults)	4	33,3
Gender		
Man	2	16,6
Woman	10	83,3
Education		
Bachelor	11	91,6
SMA	1	8,3
Marital Status		
Marry	11	91,6
Unmarried	1	8,3
Work		
Housewife	4	33,3
Private employees	6	50
Student	1	8,3
Businessman	1	8,3

Based on table 2, it is known that most of the study participants were women (83.3%). Then, the study participants consisted of individuals who were in the early adult phase (66.6%) and the intermediate adult (33.3%). Most study participants had a bachelor's educational background (91.6%) and were married (91.6%). Four of the participants went through their routine as housewives (33.3%). While six participants were workers in private companies (50%). The other participants were a student and an entrepreneur (8.3%).

Furthermore, measurements were taken on the aspect of knowledge to find out the extent of participants' knowledge about RA in general, along with the function of drugs taken, the importance of adherence behavior and the benefits of exercise increased after counseling.

Table 3. Different Knowledge Test Results

Variable	N	*Mean*	*Normality*	*Mean Difference*	p
Total Skor Pre-test Knowledge	12	9,75	0,000	1,75	0,003
Total Skor Post-test Knowledge	12	11,50	0,000		

Data processing in table 3 is done non-parametrically using *wilcoxon signed-rank test* due to abnormal data distribution of 0.000 (< 0.05). Statistical test results show an increase in knowledge between before and after following the extension program. This can be seen from the difference in the average pre and *post* knowledge aspect score of 1.75 with a significance value of less than 0.05 (p = 0.003). From these results it can be concluded that there is a significant difference in knowledge between before and after counseling.

Furthermore, measurements on the aspect of compliance attitudes were used by researchers to find out the extent to which participants' compliance attitudes improved after counseling.

Table 4. Test Results of Different Self-Compliance Attitudes

Variable	N	*Mean*	*Normality*	*Mean Difference*	p
Total Skor Pre-test Attitude	12	54,67	0,069	8,92	0.005
Total Skor Post-test Attitude	12	63,59	0,200		

Data processing in table 4 is done parametrically with *the paired sample t-test* method due to normal data distribution (> 0.05). The test results revealed an increase in self-compliance between before and after following the extension program which can be proven from the difference in average *pre* and *post* scores of 8.92 with a significance value of less than 0.05 (p = 0.005). Through these results, it can be concluded that there is a significant difference in self-compliance attitudes before and after counseling.

Furthermore, results from behavioral evaluations conducted 2 weeks after counseling was given revealed that there were behavioral changes between before and after counseling. Some family members of the extension participants revealed that after following the extension, ra sufferers in the family began to obey the advice and abstinence given by medical personnel. Some members of the SAHARA community who do not follow counseling also claim to get the impact of counseling. They received joint gymnastics videos sent by extension participants through the WA group, as well as group chats became more active. While the extension participants themselves admitted that the information obtained when counseling, especially about compliance, greatly affected themselves. They become aware of the importance of obedient behavior so that it appears in the behavior of those who begin to diligently take drugs according to dosage and doctor's advice, routine control with doctors, avoid abstinence, to find information about BPJS that can make it easier for them to perform routine checks.

DISCUSSION

Based on the results of the study, counseling can increase knowledge about RA in general, and the importance of compliance behavior is taking medication regularly, regular control to doctors, complying with the ban on medical personnel, alternative ways that can be used to reduce pain and self-adherence in undergoing treatment. This can be proven by a significant difference between average knowledge and self-compliance attitudes (See tables 3 and 4) The changes that occurred in participants are also seen from the TPB analysis that can be seen in figures 1 and 2.

When compared to the TPB chart before counseling (figure 1), in figure 2 it is known that there is a change in knowledge in RA patients present to bring changes in attitudes to behavior, subjective norms, and control over behavior. If previously RA patients often missed the control schedule and took medication regularly, then after being given counseling with the provision of materials related to the benefits of taking drugs and control to the doctor regularly makes participants become willing to take drugs and controls to the doctor regularly or according to the recommended advice. These results reinforce the statement expressed by Ajzen that the existence of sufficient information and knowledge can improve self-care behavior, in this case is taking medication regularly, regular doctor control and complying with the prohibition given by medical personnel (Ajzen, 2020).

Changes also occur in the subjective norms of RA patients, if previously RA patients felt that there was no one around him who prohibited to disobey and many RA

patients were known to do the same, then the existence of discussion sessions and contemplation in counseling about the impact felt by fellow RA sufferers when doing abstinence made participants feel that they would not be able to do so. Ontrol regularly, taking regular medication, and obeying the doctor's abstinence are important and beneficial for yourself. These results are in line with Bandura's *social cognitive* theory that learning through model approaches can result in behavioral changes that persist over a longer period of time, especially if the information is very important to him (Coleman et al., 2012).

Providing information related to other ways that can be done to reduce pain such as joint exercise and eating foods that are beneficial to the joints also increases participants knowledge about alternative options that can be done to reduce pain other than by taking medication. Changes in drug behavior regularly and the belief that taking drugs regularly has a positive impact on self as well as increased self-control of compliance behavior, making RA patients have the intention to take medication and control doctors regularly and intention in complying with the advice of medical personnel. The existence of this intention makes RA patients bring up the expected behavior that is to carry out routine control to a specialist, regularly take medication and comply with the advice of medical personnel. These results are in accordance with research revealed by Ajzen that an increase in knowledge possessed by a person can give rise to intentions that will later turn into expected behavior (Ajzen, 2020).

The weaknesses in this study that need to be considered are researchers who do not filter participants to allow the distribution of abnormal data. Then there is limited information about *Rheumatoid Arthritis* and its treatment due to the ethics of medical personnel who state that people who do not pursue pharmaceutical and medical education are prohibited to explain about the function of drugs in depth because they do not understand the consideration of drug administration. Therefore, information about the function of drugs given in this study is only limited to reducing pain and advising participants to ask the function of the drug to the doctor who prescribes it.

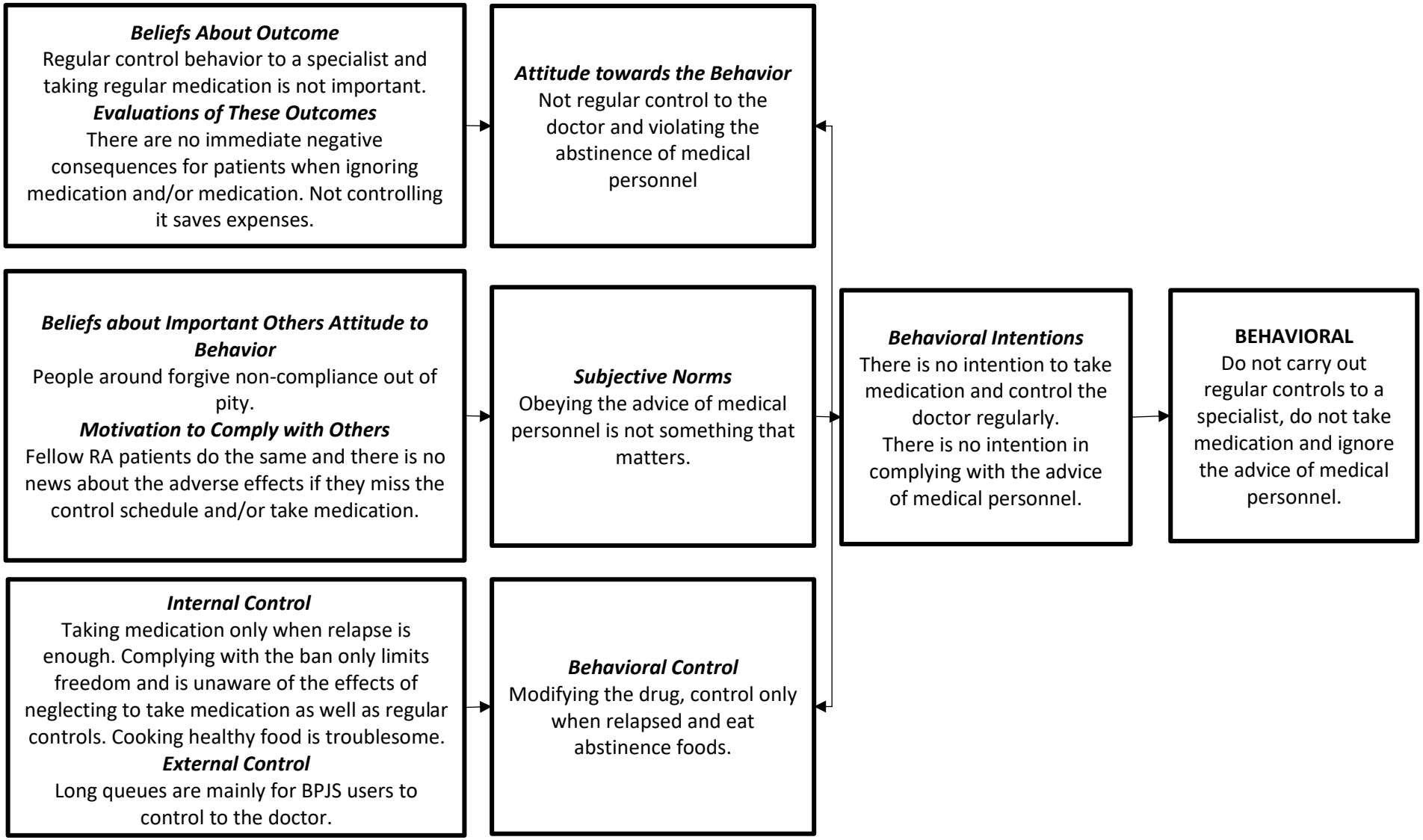

Figure 1. TPB Participant Chart Before Being Granted Counseling

Figure 2. TPB Participant Chart After Counseling

CONCLUSIONS AND SUGGESTIONS

Interventions in the form of counseling activities designed using the *Theory of Planned Behavior* framework can be said to be effective to increase the knowledge (*knowledge*) of people with *Rheumatoid Arthritis* and raise awareness about the importance of carrying out the advice of medical personnel that can lead to attitudes.) who are positive to take drugs and adhere to prohibition until the emergence of obedient behavior in carrying out treatment. This can be known from the significant increase in scores in the evaluation of knowledge and evaluation of attitudes after counseling and the changes seen in the evaluation of behavior after the granting of counseling.

Based on this study, there are changes in attitudes and behavior regarding the self-compliance of *rheumatoid arthritis* sufferers in undergoing the treatment process due to increased knowledge about the importance of carrying out doctor's advice and the impact that will be obtained when doing abstinence. The success of the delivery of material in counseling is also due to the various methods used to make it easier for participants to understand the content of the material.

The advice that can be given to counseling participants is to be able to maintain the spirit for remission by remembering the adverse effects if you do not take drugs and / or modify the drug. In addition, participants can make families and fellow extension participants as a source of support to continue to be motivated to improve compliance behavior in taking drugs and carry out abstinence from medical personnel.

For further researchers, there needs to be more in-depth literature studies and interviews with specialists so that the information provided to trainees becomes more complete. Then, bringing in a doctor for a Q&A program allows for increased motivation and compliance behavior. In addition, there needs to be *follow up* on more individuals and not just extension participants so that the effectiveness of counseling can be more visible.

As for the SAHARA community should be more aggressive in providing information about *Rheumatoid Arthritis* through *WhatsApp groups*. Administrators can look for discussion materials or information about diseases that can be spread in the group at least twice a week so that the spirit and compliance behavior of community members is maintained. The SAHARA community should also hold more frequent events together so that *Rheumatoid Arthritis* patients can be more screened and accommodated. Thus, information about the importance of compliance can also be channeled.

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