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Exploring the Role of Psychosocial Factors in Medication Compliance among Gonorrhea Patients

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ABSTRACT

Background: Gonorrhea is a globally prevalent sexually transmitted infection (STI) that continues to present a serious public health challenge, particularly in light of the increasing threat of antimicrobial resistance. Effective disease management depends significantly on patient adherence to prescribed treatments. However, suboptimal adherence is frequently reported, which undermines control efforts and contributes to the emergence of drug-resistant Neisseria gonorrhoeae strains. **Purpose:** This study aimed to identify factors influencing medication adherence among patients diagnosed with gonorrhea. **Methods:** A cross-sectional study was conducted involving 74 participants. Data were collected through structured questionnaires assessing five variables: knowledge of gonorrhea, family support, perceived stigma, self-efficacy, and treatment adherence. Univariate analysis using descriptive statistics was performed to summarize demographic characteristics and key variables. Chi-square tests were used to determine the association between predictor variables and treatment adherence. **Results:** The findings showed that 86.5% of participants had good knowledge regarding gonorrhea, while 56.6% reported insufficient family support. Most respondents (81.1%) did not experience perceived stigma, and 64.9% reported high self-efficacy. Overall, 64.9% of participants adhered to their treatment regimen. Bivariate analysis revealed significant associations between treatment adherence and knowledge (p = 0.007; OR = 6.111), family support (p = 0.008; OR = 4.821), perceived stigma (p = 0.001; OR = 7.571), and self-efficacy (p = 0.001; OR = 7.200). **Conclusion:** The results underscore the importance of psychosocial factors in enhancing medication adherence. Targeted interventions addressing knowledge, family support, stigma, and self-efficacy are essential to improving treatment outcomes and reducing gonorrhea transmission.

Keywords*:* gonorrhea, medication adherence, psychosocial factors.

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BACKGROUND

Gonorrhea, a prevalent sexually transmitted infection (STI) caused by *Neisseria gonorrhoeae*, presents a significant public health challenge.[1] Gonorrhea is the second most prevalent sexually transmitted infection (STI) globally. In 2020, WHO estimated approximately 80 million new cases of gonococcal infections worldwide. Indonesia ranks second in Southeast Asia, following Thailand, with approximately 5.6 cases per 100,000 adult males.[2] The transmission of gonorrhea through various sexual practices (vaginal, anal, and oral sex) contributes to its global prevalence.[3] Untreated gonorrhea can lead to severe complications, including epididymitis in males and pelvic inflammatory disease in females, both of which may result in infertility.[4] The impact of gonorrhea extends beyond individual health outcomes; it also affects communities and economies.[5,6]

Recent challenges in treating gonorrhea primarily stem from the emergence of multidrug-resistant strains of *Neisseria gonorrhoeae*, posing significant risks to effective management and public health.[7] Several studies suggest that low patient adherence to treatment, including repeated visits to health facilities, may exacerbate this issue.[8,9] Research indicates varying levels of adherence to treatment guidelines across

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diverse healthcare settings. In Europe, several countries exhibited suboptimal adherence to evidence-based guidelines, underscoring the need for improved compliance to control gonorrhea incidence and drug resistance.[10] Similarly, a report from Ontario, Canada, indicated that only 60% of patients received first-line treatment one year after the updated guidelines were released.[11] In contrast, the United States showed higher adherence rates, with 81% of patients receiving the CDC-recommended regimen, especially in specialized STD clinics.[12] However, another study revealed significant non-adherence in follow-up management of gonorrhea cases, highlighting the necessity for enhanced preventive care.[13]

Compliance with healthcare is influenced by a various interrelated factors.[14] Previous studies have primarily focused on various medical aspects, including dose accuracy, physician adherence to treatment guidelines, types of therapies, and co-infections.[15–17] A holistic approach that considers psychological and social factors alongside medical aspects is essential for improving patient adherence and achieving optimal treatment outcomes.[18] A lack of knowledge about gonorrhea negatively impacts risk perception and adherence to treatment.[19] Social support—both emotional and instrumental—is critical; individuals with strong social networks tend to be more adherent, whereas anxiety and depression decrease adherence.[20,21] Social pressures and community norms can either encourage or discourage individuals from seeking treatment or following medical advice; stigma and negative judgment frequently serve as barriers.[22,23] Self-efficacy also influences medication adherence. Patients with sexually transmitted infections who possess high self-efficacy tend to be more confident in their treatment journey and find it easier to overcome the challenges they encounter.[24]

However, research on the factors influencing treatment adherence among gonorrhea patients in Medan City is currently limited. Studies that concentrate on the subjective viewpoints of gonorrhea patients are also scarce. Hospitals are essential healthcare facilities for managing patients with gonorrhea. Royal Prima Hospital, which serves patients with sexually transmitted infections, is committed to enhancing medication adherence among those diagnosed with gonorrhea. Medical record data indicates fluctuations over the past two years. At Royal Prima Hospital, the number of gonorrhea cases increased from 97 in 2022 to 113 in 2023. Therefore, this study aims to analyze how patient knowledge, family support, perceived stigma, and self-efficacy influence medication adherence among gonorrhea patients at Royal Prima Hospital.

METHODS

This research was an analytical study utilizing a cross-sectional design, involving a total of 74 gonorrhea patients undergoing treatment at Royal Prima Hospital in Medan from January to July 2024. The sample were a purposive sampling technique, ensuring that the participants were gonorrhea patients undergoing treatment at Royal Prima Hospital and willing to participate as respondents. The independent variables examined included knowledge, family support, perceived stigma, and self-efficacy, whereas the dependent variable was patient compliance in medication adherence.

Data were collected through questionnaires. Patients' knowledge of gonorrhea was assessed using seven items, leading to two categories: “Good” (score ≥ average) and “Not good” (score < average). Family support was evaluated based on ten items measuring various forms of support, including instrumental, informational, appraisal, and emotional, with results categorized as “Received support” (score ≥ average) and “Lack of support” (score < average). Perceived stigma was measured with 28 items to capture the complexity of gonorrhea-related social stigma, resulting in the same categories: “Not distressed” (score ≥ average) and “Distressed” (score < average). Patient self-efficacy regarding gonorrhea treatment was assessed using eleven items, which resulted in “High” (score ≥ average) and “Low” (score < average) categories. Medication adherence was evaluated based on ten items measuring patients' consistency in following their treatment regimen, leading to the categories “Adherent” (score ≥ mean) and “Non-adherent” (score < mean). All variables utilized ordinal measurement scales.

Data analysis in this study was conducted in stages. Univariate analysis utilized descriptive statistics to characterize the respondents, including demographics, knowledge, social support, perceived stigma, self-efficacy, and treatment adherence. Bivariate analysis, using the chi-square test, was employed to examine the relationships between the independent variables (social support and perceived stigma) and the dependent variable (treatment adherence). Finally, multivariate analysis with multiple logistic regression was conducted to identify factors that significantly influenced treatment adherence, considering the results of the bivariate analysis. This study has received ethical approval from the Health Research Ethics

Commission at Prima Indonesia University (No. 063/KEPK/UNPRI/VII/2024).

RESULT

Table 1 presents the demographic and clinical characteristics of the 74 respondents who participated in this study. These characteristics include age, gender, education level, knowledge related to gonorrhea, family support, perceived stigma, self-efficacy, and adherence to treatment.

The age distribution of respondents indicates that the majority (63.5% or 47 individuals) were in the productive age range of 26-35 years. The next significant age group was 36-45 years (31.1% or 23 individuals), while only a small proportion of respondents (5.4% or 4 individuals) were over 45 years old.

The gender distribution showed a slightly larger proportion of males (56.6%) compared to females (43.2%). In terms of education level, bachelor graduates dominated the sample, comprising 45.9%, followed by senior high school graduates at 28.4% and diploma graduates at 25.7%. This finding indicates that most respondents possess a relatively high level of education.

Table 1. Demographic and clinical characteristics

Variable	n	%
Age		
26-35 years	47	63.5
36-45 years	23	31.1
> 45 Years old	4	5.4
Gender		
Male	42	56.6
Female	32	43.2
Education level		
Senior High School	21	28.4
Diploma	19	25.7
Bachelor	34	45.9
Knowledge		
Not good	10	13.5
Good	64	86.5
Family support		
Lack of support	42	56.6
Receive support	32	43.2
Perceived stigma		
Distressed	14	18.9
Not distressed	60	81.1
Self efficacy		
Low	26	35.1
High	48	64.9
Medication adherence		
Not adherent	26	35.1
Adherent	48	64.9

The respondents' knowledge regarding gonorrhea was classified as good for the majority, specifically 86.5%, while the remaining 13.5% exhibited a poor level of knowledge. Regarding family support, most respondents (56.6%) reported feeling a lack of support, in contrast to 43.2% who felt they had adequate support.

Perceptions of stigma revealed that most respondents (81.1%) did not feel pressured by stigma, while 18.9% did experience such pressure. In terms of self-efficacy, the majority of respondents (64.9%) reported a high level, whereas 35.1% indicated low self-efficacy. Finally, concerning medication adherence, a total of 48 individuals adhered to the prescribed treatment. In contrast, 26 respondents were categorized as non-compliant with the treatment.

The results of the chi-square test indicate a significant relationship between medication adherence and factors such as knowledge, family support, perceived stigma, and self-efficacy (see Table 2). Patients with adequate knowledge tend to be more compliant in taking their medication. Among patients with good knowledge, 74.3% were compliant, while

only 6.8% were non-compliant. In contrast, patients with poor knowledge exhibited a higher proportion of non-adherence (6.8% vs. 12.2%). A p-value of 0.007 indicates a statistically significant association, and an odds ratio (OR) of 6.111 (with a 95% confidence interval ranging from 1.468 to 25.433) suggests that patients with good knowledge are 6.1 times more likely to adhere to their medication compared to those with poor knowledge.

Family support plays a crucial role in medication adherence. Patients who received family support exhibited a significantly higher adherence rate of 63.5% compared to those without such support, who had an adherence rate of only 17.6%. Conversely, patients with less family support were more likely to be non-adherent, with rates of 10.8% versus 8.1%. The statistical analysis revealed a p-value of 0.008 and an odds ratio (OR) of 4.821, indicating that family support increases the odds of medication adherence by nearly fivefold, with a 95% confidence interval ranging from 1.418 to 16.390.

Patients' perceived stigma also influenced medication adherence. Patients who did not feel pressured by stigma showed a significantly higher adherence rate (71.6%) compared to those who felt pressured (9.5%). The proportion of non-adherent patients was also higher in the stigmatized group (9.5% vs. 90.5%). The minimal p-value (0.001) and high odds ratio (7.571, with a 95% confidence interval between 2.041 and 28.090) indicated that the perception of negative stigma significantly decreased the odds of medication adherence.

Self-efficacy is a significant predictor of medication adherence. Patients with high self-efficacy demonstrated a higher adherence rate of 64.9% compared to just 16.2% in those with low self-efficacy. Additionally, the proportion of non-adherents was greater in the low self-efficacy group, with rates of 12.2% versus 6.8%. The p-value of 0.001 and an odds ratio (OR) of 7.200 (with a 95% confidence interval ranging from 2.036 to 25.460) indicate that high self-efficacy increases the odds of medication adherence by more than sevenfold.

DISCUSSION

The results of this study demonstrated a significant relationship between treatment adherence and various factors, namely knowledge, family support, perceived stigma, and patient self-efficacy. Analysis using the chi-square test revealed that these four factors play an important role in determining the level of patient compliance with treatment.

Patient understanding of gonorrhea significantly impacts their adherence to treatment, affecting both their personal health habits and the efficiency of healthcare services. Knowledge about gonorrhea, including its symptoms, transmission, and treatment options, empowers patients to adhere to prescribed treatment regimens. Individuals who understand the importance of finishing antibiotic treatments and the risks of untreated infections are more inclined to complete their prescribed treatments. Studies indicate that patients who receive comprehensive education about their condition tend to have better adherence rates to treatment protocols.[25,26] Limited literacy can hinder access to STI care, potentially leading to poorer health outcomes and higher transmission rates.[27] Public health efforts focusing on education and awareness, especially within interdisciplinary healthcare teams, are beneficial for enhancing patient adherence to treatment plans, including those for gonorrhea. These improvements come from initiatives like thorough screening programs at clinics, which provide chances to educate patients about the necessity of completing their treatments.[28] Leveraging digital platforms, such as social media and online learning materials, can significantly extend the reach of health education.[29]

Family support plays a crucial role in medication adherence. Emotional support encourages individuals to seek treatment and adhere to medical advice, while practical assistance aids in navigating the complexities of STI management. Healthy family interactions foster open communication about sexual health, leading to improved health outcomes for all members.[30] Literature indicates that positive family interactions enhance an individual's ability to cope with health-related stress, improving adherence to treatment plans and preventive measures.[31] Conversely, families marked by conflict or poor communication may induce feelings of shame or isolation, reducing the likelihood that individuals will seek treatment or adhere to medical advice.[32,33] Family members also provide practical assistance in managing STIs. This assistance includes logistics such as attending medical appointments, understanding treatment protocols, and ensuring access to necessary medications. Families that actively engage in health management create a supportive environment for recovery by facilitating discussions about sexual health and promoting safe practices.[34]

Table 2. Predictors of gonorrhea patient medication adherence

Predictors	Medication adherence				p	OR
	Not adherent		Adherent			
	n	%	n	%		
Knowledge						
Not good	5	6.8	5	6.8	0.007	6.111 (1468 – 25.433)
Good	9	12.2	55	74.3		
Family support						
Lack of support	8	10.8	13	17.6	0.008	4.821 (1.418 – 16.390)
Receive support	6	8.1	47	63.5		
Perceived stigma						
Distressed	7	9.5	7	9.5	0.001	7.571 (2.041 – 28.090)
Not distressed	7	9.5	53	71.6		
Self efficacy						
Low	9	12.2	12	16.2	0.001	7.200 (2.036 – 25.460)
High	5	6.8	48	64.9		

OR = Oods ratio

The perception of stigma significantly impacts medication adherence. Perceived stigma refers to the fear of negative judgment from society regarding having a sexually transmitted infection (STI) like gonorrhea. People may fear discrimination in social, professional, or healthcare settings because of their diagnosis. Literature indicates patients may experience feelings of shame associated with their diagnosis, leading them to believe they are unworthy of care or that they deserve their condition. This mindset can result in non-adherence to treatment regimens because individuals may feel demotivated to pursue recovery.[35,36] Anticipation of being ostracized or judged by peers may also lead an individual to avoid healthcare altogether.[37] Given the profound effects of perceived stigma on healthcare behaviors, there is a pressing need for targeted interventions aimed at reducing stigma associated with STIs. Such interventions could include community education programs that normalize discussions about STIs and promote understanding and support among peers[4]. Additionally, healthcare providers should be trained to create non-judgmental environments that encourage patients to seek care without fear of stigma.[36]

Self-efficacy is a significant predictor of medication adherence. Patients with high self-efficacy are more likely to believe they can successfully follow their treatment regimens, including taking medications as prescribed. This belief increases the likelihood of adhering to complex treatment plans, such as dual therapy for gonorrhea, which involves multiple medications taken at specific times. Several studies identify self-efficacy as a key driver of medication adherence among people with STIs.[38–40] Individuals with strong self-efficacy tend to be more motivated and persistent when confronted with challenges related to health management. They are more likely to overcome barriers, such as side effects or misconceptions regarding the importance of adhering to their medication regimen. For example, a study found that patients who reported greater confidence in managing their health were significantly more likely to adhere to the prescribed 7-day doxycycline regimen for chlamydia and gonorrhea.[41]

Self-efficacy, or an individual's belief in their ability to perform specific behaviors, is crucial in managing gonorrhea as it affects the likelihood of patients notifying partners and seeking treatment. Research shows a positive correlation between higher self-efficacy and partner notification, indicating that interventions designed to enhance self-efficacy may lead to better health outcomes.[42] Several psychological approaches can effectively boost self-efficacy and promote responsible sexual health behaviors. These include Motivational Interviewing (MI), which helps individuals explore their motivations for change, behavioral counseling, and educational interventions that inform about STIs and their consequences.[43–45]

This study was limited by several methodological factors. The small sample size restricts the generalizability of the findings to a broader population. Additionally, reliance on self-reported data for knowledge, family support, perceived stigma, and self-efficacy introduces potential bias and lacks objective measurement. The cross-sectional design hinders the establishment of cause-and-effect relationships, and the study did not account for potential confounding variables such as mental health and healthcare access.

This study identified several key factors that influence adherence to gonorrhea treatment among a predominantly educated young adult male population. The study found strong correlations between adherence

and several factors: patient knowledge, family support, perceived lack of stigma, and high self-efficacy. These findings highlight the necessity of public health strategies that prioritize patient education, encourage family involvement, reduce stigma, and enhance self-efficacy through targeted interventions to improve treatment outcomes and reduce gonorrhea transmission.

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