JMCH Journal of Maternal and Child Health (2026), 11(02): 124-137
Master's Program in Public Health, Universitas Sebelas Maret

Research
Open Access

Factors Related to Depressive Symptoms among Individuals with Positive Syphilis Screening Results

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Received: January 13, 2026; Accepted: March 24, 2026; Available online: May 16, 2026

ABSTRACT

Background: Syphilis, a sexually transmitted infection caused by Treponema pallidum, is not only associated with physical manifestations but also an increased risk of depressive symptoms. This study aimed to examine factors associated with depressive symptoms among syphilis-positive blood donors in Surabaya, with particular attention to family involvement and blood donation frequency.

Subjects and Method: A cross-sectional study was conducted among 186 prospective blood donors with reactive syphilis screening results in Surabaya, Indonesia. Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9), and family involvement was measured using the Family Support Scale (FSS). Blood donation frequency was categorized as regular (≥ 6 donations) or non-regular (< 6 donations) prior to the diagnosis of syphilis. Data were tested using multivariable binary logistic regression.

Results: Higher levels of depressive symptoms were significantly associated with older age, being unmarried, lower family involvement, and non-regular blood donation in the bivariate analysis. Non-regular blood donation was significantly associated with depressive symptoms (p = 0.023). In the multivariable logistic regression analysis, male sex (OR= 0.320, p= 0.002) and early adulthood (OR= 6.215, p= 0.002) emerged as independent predictors of depressive symptoms.

Conclusion: Depressive symptoms among individuals with positive syphilis screening results are significantly associated with demographic and psychosocial variables. Although family involvement and donation frequency were not independent predictors in the multivariable model, they remain relevant considerations for public health interventions aimed at improving mental health outcomes in this population.

Keywords: blood donation, depression, family involvement, syphilis, voluntary

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Cite this as:
Badrus AR, Khairoh M, Amalia Y, Widuri S, Kwarta CP, Ganisia A, Anggraeni N, Maghfiroh F. (2026). Factors Related to Depressive Symptoms among Individuals with Positive Syphilis Screening Results. *J Matern Child Health*. 11(2): 124-137. https://doi.org/10.26911/thejmch.2026.11.02.05.

BACKGROUND

Syphilis, a sexually transmitted disease caused by the bacterium Treponema pallidum, remains a serious health problem worldwide, especially in countries with limited health facilities, due to its potential to cause severe and irreversible damage to vital organs if left untreated. (Waugh et al., 2023). Syphilis is highly contagious, especially when syphilis sores, ulcers, or rashes appear. Transmission primarily occurs through sexual intercourse (vaginal, anal, or oral) with an infected person. In addition, transmission can occur through direct contact with syphilis sores, kissing, or transmission from a pregnant mother to her fetus. According to WHO (2022), the global prevalence of syphilis is estimated to be around 1.11%. In 2021, there were around 70.5 million cases of syphilis worldwide, with the highest number in Central Sub-Saharan Africa (WHO, 2025). There is an increase in new cases of syphilis every year in Indonesia, and pregnant women are the main drivers of syphilis transmission in Indonesia, also due to risky sexual behaviour. In 2018, syphilis cases were recorded at a total of 12,484 cases. This number continues to increase and will reach 20,783 cases in 2022 (Kementerian Kesehatan Republik Indonesia, 2024). The rising prevalence in Indonesia presents a unique challenge, as the national healthcare system still struggles with a significant gap between infectious disease management and mental health integration. Stigma remains a powerful cultural barrier in Indonesia, often preventing patients from seeking psychological help even when the infection begins to affect their mental well-being (Basrowi et al., 2024). This disease can attack various organs of the body if left untreated. In addition to physical health problems such as skin wounds, nerve disorders, and heart problems, syphilis also often affects a person's mental health (Ciccarese et al., 2024). Many studies have shown that people infected with syphilis are more susceptible to mental health problems such as anxiety and depression (Alfian et al., 2025; Idris, 2022; Monteiro et al., 2023). These depressive symptoms can arise for various reasons, such as the social stigma that is often attached to this disease, concerns about health conditions, or even the direct effects of the infection itself on the body (Yin et al., 2024). Recent findings from an expert consensus highlight the urgent need for increased mental health awareness in Indonesia. These findings underscore the necessity for Indonesians to prioritize mental health awareness and allocate sufficient resources for screening, diagnosis, and treatment of mental health disorders (Basrowi et al., 2024). Of course, this condition can further decrease the quality of life of sufferers and hinder the proper treatment process.

One interesting factor to study is voluntary blood donation. Blood donation is a very important noble act because until now human blood cannot be made synthetically. In addition to the obvious medical benefits, blood donation can also provide psychological benefits, such as feelings of happiness from helping others, positive social interactions, and even biological effects such as regulating iron levels in the body (Abolfotouh et al., 2014; Haugen et al., 2024). Beyond its crucial role in saving lives, blood donation also offers direct medical benefits to the donor. Regular blood donation can help in regulating iron levels in the body, potentially reducing the risk of iron overload and associated health complications (Romero-Domínguez et al., 2022). Contributing to the well-being of others through blood donation can lead to positive psychological outcomes. Donors often experience feelings of happiness and

fulfillment from the act of helping someone in need. This altruistic behavior can foster a sense of purpose and social connection. The act of blood donation can also facilitate positive social interactions within the community. Furthermore, there are biological effects that contribute to psychological well-being, such as the aforementioned regulation of iron levels, which can indirectly impact mood and energy levels (Makowicz et al., 2022).

A person's belief in their ability to donate blood (self-efficacy) also plays an important role in the decision to donate blood (Dorner et al., 2021). However, imagine if someone who frequently donates blood suddenly tests positive for syphilis during screening. That situation can trigger stress or depression because of bad news about the seropositivity of syphilis. Receiving news of a positive syphilis test, or seropositivity, can trigger stress and depression, particularly because it can be an unexpected and unwelcome revelation, especially for individuals who are regular blood donors. The implication is that such a diagnosis carries significant weight due to the nature of syphilis as a sexually transmitted infection, potentially leading to feelings of shock, anxiety about the health implications, and concerns about transmission and relationships (Bonett et al., 2022). This unexpected health information can therefore negatively impact mental well-being. Therefore, the frequency of blood donation can be a factor that plays a role in moderating the impact of syphilis on depressive symptoms (Balaskas et al., 2024). This implies a scenario where the syphilis diagnosis comes first, potentially leading to subsequent depressive symptoms. Blood donor screening is essential to ensure the safety of blood to be transfused (Balaskas et al., 2024; Wang et al., 2019). Recruiting and retaining volunteer blood donors from low-risk groups is key to a safe and sustainable blood supply. However, with the world's ageing population and increasing demand for blood, maintaining a balance between blood supply and demand is a major challenge. Pre-donor screening, while important, can cause some donors to be postponed or even rejected, which can negatively impact their blood donation habits, especially for first-time donors (Hartini *et al.*, 2022; Wang *et al.*, 2019).

Therefore, understanding the frequency patterns of blood donation is important to maintain the blood supply. Frequent donors usually have a strong identity as donors, which is their primary motivation. Donors can be grouped based on their donation frequency, such as nonregular donors (<6 times) and regular donors (more than 6 times). The combination of frequency and how long someone has been a donor allows for more detailed classifications, such as new active donors, habitual donors, and established donors. Donors can also move categories over time, and donors who have stopped can be reactivated (Purnamaningsih et al., 2022). Therefore, blood donation frequency may be associated with depressive symptoms among syphilis-positive blood donors, both as a form of social involvement that supports mental well-being and as a stressor when blood donation is stopped due to disease detection. Specifically, donation frequency acts as a moderator because it defines the strength of a donor's social identity; for high-frequency donors, a syphilis diagnosis doesn't just represent a health crisis, but a profound loss of their prosocial role and "healthy status," which may accelerate depressive symptoms more severely than in occasional donors.

Family involvement can boost mental support, and more frequent blood donations without contraindication can make

them panic if they receive seropositivity for syphilis, which can trigger stress (Idris and Tuzzahra, 2023). Therefore, the frequency of blood donation isn't simply a protective factor or a risk factor; its influence on the relationship between syphilis and depression is complex and can operate in opposing ways depending on the individual's experience with donation and the circumstances of diagnosis (Balaskas et al., 2024; Hughes et al., 2016; Wu et al., 2019).

In addition to the habit of donating blood, family involvement also plays an important role in maintaining mental and physical health. Social support from family can help someone deal with stress due to chronic diseases or sexually transmitted infections such as syphilis (Kaptoge et al., 2019). Research by Carolina shows that people who have strong family support tend to have better mental health and are less likely to experience depression (Alfian et al., 2025). In the context of blood donation, family can also influence a person's decision to donate blood, both through moral encouragement and established family habits. Family involvement was considered an important psychosocial factor that may be associated with depressive symptoms. While the diagnosis creates a depressive path, the presence of family support can alter this trajectory by providing emotional validation and reducing the psychological weight of the stigma.

Therefore, the role of the family in the relationship between syphilis and depression needs to be further studied as a factor that has the potential to impact of syphilis on an individual's mental health (Singh and Singh, 2021). This study aimed to examine factors associated with depressive symptoms among syphilis-positive blood donors in Surabaya, with particular attention to family involvement and blood donation frequency. Thus, the results of this study are expected to provide a new understanding of the psychological impact of syphilis and its implications for health policies related to blood donation and the prevention of sexually transmitted diseases. Despite the growing importance of this issue, there is a clear gap in existing research, as few studies have examined how these specific behavioral and social factors donation identity and family support interact to influence mental health outcomes in syphilis patients. By addressing this gap, the study provides a unique contribution to understanding the intersection of prosocial behavior, social support, and infectious disease psychology. Unfortunately, there is still little research that discusses factors that can explain the relationship between syphilis and depression.

SUBJECTS AND METHOD

1. Study Design

This was a cross-sectional study conducted at the Indonesian Red Cross (PMI) in Surabaya, East Java, Indonesia, in 2024.

2. Populationand Sample

A cross-sectional study was conducted among 186 prospective blood donors with reactive syphilis screening results in Surabaya, Indonesia. Stratified random sampling was used to ensure proportional representation across different demographic groups. The stratification was based on two primary variables: gender (male and female) and donation history (first-time vs. repeat donors). Within each stratum, participants were randomly selected from the PMI database using a computerized random number generator until the target quotas were met. The total sample consisted of 186 prospective blood donors, all of whom had positive syphilis screening results during routine blood donor screening.

3. Study Variables

The dependent variable was depressive symptoms. The independent variables were gender, age, marital status, family involvement, and blood donation frequency.

4. Operational Definition of Variables

The clinical status of participants was determined using a two-tier testing strategy in accordance with Indonesian Ministry of Health protocols. Initial screening was performed using a treponemal-specific enzyme-linked immunosorbent assay (ELISA), and all reactive samples were subsequently confirmed using the Treponema pallidum hemagglutination assay (TPHA). Only individuals with TPHA-confirmed positive results were classified as syphilis-positive and included in the study.

Depressive symptoms were defined as the severity of depressive symptoms experienced by participants, measured using the Patient Health Questionnaire-9 (PHQ-9). For analytical purposes, scores were categorized into two groups: low depressive symptoms (0–9) and high depressive symptoms (10–27).

Family involvement was defined as the extent of emotional, financial, and instrumental support provided by family members, as well as their influence on blood donation and health-related decision-making. For analytical purposes, family involvement was categorized as weak or strong.

Blood donation frequency was defined as the participant's history of voluntary blood donations prior to receiving a confirmed positive syphilis test result. For analysis, donors were categorized as regular donors (≥6 donations) or non-regular donors (< 6 donations).

5. Study Instruments

Data on syphilis seropositivity were obtained from clinical laboratory results via ELISA and TPHA testing protocols. Data on depressive symptoms were measured by the Patient Health Questionnaire-9 (PHQ-9). Data on family involvement were measured by the Family Support Scale (FSS), a 15-item scale utilizing a 5-point Likert response format with a Cronbach's alpha of 0.84. The other variables (demographics and donation frequency) were collected by a combination of in-person interviews, telephone interviews, and self-administered questionnaires using a standardized script.

6. Data Analysis

Data on syphilis seropositivity were obtained from clinical laboratory records based on a two-tier testing protocol consisting of an enzyme-linked immunosorbent assay (ELISA) for initial screening and the Treponema pallidum hemagglutination assay (TPHA) for confirmation. Only participants with TPHA-confirmed positive results were classified as syphilis-positive.

Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9), a widely used self-report instrument for measuring the severity of depressive symptoms.

Family involvement was measured using the Family Support Scale (FSS), a 15-item instrument that assesses emotional, financial, and instrumental support from family members. Responses were rated on a 5-point Likert scale, and the scale demonstrated good internal consistency reliability (Cronbach's $\alpha = 0.84$).

Demographic characteristics and blood donation frequency were collected through a combination of face-to-face interviews, telephone interviews, and self-administered questionnaires using a standardized data collection protocol.

7. Research Ethic

In the implementation of this study, ethical aspects will be considered by obtaining approval from the Health Research Ethics Committee with number 2638/KEPK/

UNIV-NHM/EC/I/2025 from Universitas Ngudi Husada Madura, as well as ensuring that all participants have given informed consent before participating in the study.

RESULTS

1. Characteristics of Respondents, Family Involvements, and Depressive Sympstoms

Based on Table 1, the majority of respondents were male (60.2%), in early adulthood aged 17–35 years (61.8%), married (53.2%), reported unhelpful family involvement (68.8%), and were regular blood donors (61.3%).

The bivariate analysis showed that age, marital status, family involvement, and blood donation frequency were significantly associated with depressive symptoms. Respondents aged 17–35 years had significantly higher odds of experiencing depressive symptoms than those aged over 35 years (OR=2.37; 95% CI=1.96–9.06; p <0.001). Married respondents had lower odds of depressive symptoms than unmarried respondents (OR=0.38; 95% CI= 0.20–0.73; p=0.004). Family involvement was also significantly associated with depressive symptoms (OR=2.03; 95% CI= 1.06–3.92; p=0.040), as was blood donation frequency (OR= 2.22; 95% CI=1.12–4.39; p=0.023). In contrast, gender was not significantly associated with depressive symptoms (p=0.051).

Table 1. Characteristics of respondents, family involvement, and depressive symptoms

Variables	Depressive Symptoms				Total		OR	p
	High	Low	High	Low				
	n	%	n	%	n	%		
Gender								
Male	84	65.1	28	49.1	112	60.2	0.517 (0.28-0.97)	0.051
Female	45	34.9	29	50.9	74	39.8		
Age (years)								
Early Adulthood (17-35 years)	68	52.7	47	82.5	115	61.8	2.37 (1.96-9.06)	0.000
Late Adulthood (>35 years)	61	47.3	10	17.5	71	38.2		
Marital Status								
Married	78	60.5	21	36.8	99	53.2	0.381 (0.20-0.73)	0.004
Unmarried	51	39.5	36	63.2	87	46.8		
Family Involvement								
Helpful	34	26.4	24	42.1	58	31.2	2.032 (1.06-3.92)	0.040
Unhelpful	95	73.6	33	57.9	128	68.8		
Blood Donation Frequency								
Regular	72	55.8	42	73.7	114	61.3	2.217 (1.12-4.39)	0.023
Irregular	57	44.2	15	26.3	72	38.7		

2. Binary logistic regression analysis of factors associated with depressive symptoms

To identify independent factors associated with depressive symptoms, all selected variables were entered into a binary logistic regression model. The results are presented in Table 2.

As shown in Table 2, after adjustment for potential confounding variables, only gender and age remained significantly associated with depressive symptoms. Male

respondents had significantly lower odds of experiencing depressive symptoms than female respondents (aOR=0.32; 95% CI= 0.15–0.67; p=0.002). Meanwhile, respondents in the early adulthood group (17–35 years) had more than six times higher odds of experiencing depressive symptoms than those aged over 35 years (aOR=6.22; 95% CI=1.91–20.22; p=0.002).

Marital status (aOR=0.47; 95% CI= 0.21–1.04; p=0.063), family involvement (aOR= 1.67; 95% CI=0.80–3.49; p=0.172), and blood donation frequency (aOR= 0.40; 95% CI= 0.13–1.22; p=0.107) were not statistically significant in the multivariable model, indicating that these variables did not independently predict depressive symptoms after adjustment.

Table 2. Binary logistic regression analysis of factors associated with depressive symptoms

Variables	aOR	95% CI		p
		Lower limit	Upper limit	
Gender				
Female	Ref.			
Male	0.32	0.15	0.67	0.002
Age (years)				
Late Adulthood (>35 years)	Ref.			
Early Adulthood (17-35 years)	6.22	1.91	20.22	0.002
Marital Status				
Unmarried	Ref.			
Married	0.47	0.21	1.04	0.063
Family Involvement				
High	Ref.			
Low	1.67	0.80	3.49	0.172
Blood Donation Frequency				
Irregular	Ref.			
Regular	0.40	0.13	1.22	0.107

DISCUSSION

The analysis explores associations between various demographic and behavioural variables and the presence of depressive symptoms among blood donors, Table 1. expressed as odds ratios (OR) with 95% confidence intervals (CI) and corresponding *p*-values. Gender was not significantly associated with depressive symptoms (p = 0.51). Although males constituted a greater proportion of the high depressive symptom group (65.1%) compared to the low symptom group (49.1%), the odds ratio of 0.517 (95% CI: 0.275–0.974) suggests that males may have lower odds of exhibiting depressive symptoms compared to females, but this result was not statistically significant. Age category was significantly associated with depressive symptoms (p = 0.00). Individuals in early adulthood (17–35 years) were more likely to be in the low depressive symptom group (82.5%) compared to those in late adulthood (>35 years) (17.5%). The odds ratio of 0.422 (95% CI: 1.962–9.061) suggests a strong association, indicating that older adults were at a considerably higher risk of depressive symptoms than younger adults, and this result was statistically significant.

Marital status demonstrated a statistically significant relationship with depressive symptoms (p = 0.004). Among individuals with high depressive symptoms, 60.5% were married, compared to 36.8% in

the low symptom group. The odds ratio of 0.381 (95% CI: 0.200–0.726) indicates that married individuals were significantly less likely to experience depressive symptoms compared to their unmarried counterparts. Family involvement also showed a significant association with depressive symptoms (p = 0.040). A larger proportion of individuals who reported unhelpful family involvement (73.6%) experienced high depressive symptoms. The odds ratio of 2.032 (95% CI: 1.055–3.915) suggests that those with low family support had approximately twice the odds of experiencing depressive symptoms compared to those with helpful family support. Blood donation frequency was significantly associated with depressive symptoms (p = 0.023). Non-regular donors were more represented in the high symptom group (44.2%) compared to the low symptom group (26.3%). The odds ratio of 2.217 (95% CI: 1.118–4.394) implies that individuals who donate blood irregularly are over twice as likely to report depressive symptoms compared to regular donors.

Depression can be caused by internal factors (genetic, biological, psychological) and external factors (environmental, social, economic) (Alaie et al., 2021; Schumacher et al., 2024). Internal factors include family history, physical health problems, and past traumatic experiences. External factors include life stressors, relationship problems, financial difficulties, and social isolation (Seiler et al., 2019; Yin et al., 2024). Lack of education can be a risk factor for depression (dos Santos et al., 2019). Another risk factor that causes depression is marital status; it is explained that there is a relationship between marital status and depression, and the chance of depression is greater in people who are unmarried or no longer have a life partner (Hidayah et al., 2019). Family involvement acts as a protective factor against the psychological impact of a positive syphilis screening result. One of the factors that influence the prevention of infectious diseases in women of childbearing age is family support. Family support given to women of childbearing age effectively can improve their quality of life. The family is a group that has a very important role in developing, preventing, adapting and improving health problems found in the family. The role of the family in, among others, maintaining and improving mental status anticipating changes in socio-economic status providing motivation and facilitating spiritual needs (Alfian et al., 2025; Idris and Tuzzahra, 2023; Monteiro et al., 2023). Individuals with high family support tend to have better coping mechanisms and do not experience increased depressive symptoms despite receiving a positive syphilis screening result. In contrast, individuals with low family involvement are more vulnerable to the psychological impact of a syphilis diagnosis due to the lack of social support that can help them cope with the stigma and uncertainty associated with the disease (Rana and Deb, 2021). Blood donation frequency was significantly associated with depressive symptoms in bivariate analysis, but it was not an independent predictor in the multivariable logistic regression model (Di Angelantonio et al., 2017). The results of the analysis showed that individuals who donated blood more frequently tended to have higher levels of depression if they received a positive syphilis screening result. This may be explained by the greater disappointment because they considered themselves healthy and contributing socially through blood donation, but suddenly received information about having a sexually transmitted infection. Feelings of failure, social stigma, and fear of health

consequences may contribute to increased depressive symptoms in this group.

In the regression analysis, gender and age were significant independent predictors of depressive symptoms. Family involvement and blood donation frequency were not statistically significant after adjustment (Table 2). Overall, gender and age emerged as significant independent predictors of depressive symptoms, with male gender acting as a protective factor and early adulthood representing a risk factor. Overall, gender and age as significant independent predictors of depressive symptoms, with male gender acting as a protective factor and early adulthood representing a risk factor. The shift in significance for family involvement and donation frequency from the bivariate to the multivariate model suggests that their influence may be overlapping with demographic factors like age. This indicates that family involvement and blood donation frequency were associated with depressive symptoms in bivariate analysis, but their effects were not independent after adjustment for demographic variables. Furthermore, the model did not account for confounding variables such as socioeconomic status or educational background, which might further explain the variance in depressive symptoms and should be explored in future research.

Gender was found to be a significant predictor of depressive symptoms (p= 0.002). Male participants were significantly less likely to report depressive symptoms compared to females, suggesting that the odds of depressive symptoms were approximately 68% lower among males. Age also showed a significant association with depressive symptoms. Individuals in early adulthood (17–35 years) had significantly higher odds of experiencing depressive symptoms compared to those in late adulthood. This indicates that younger adults were over six times more likely to exhibit depressive symptoms.

Married individuals had lower odds of depressive symptoms than unmarried individuals. Family involvement was not significantly associated with depressive symptoms (p= 0.172). Nonetheless, participants who reported had low family support had 1.67 times the odds of reporting depressive symptoms compared to those with helpful support. Blood donation frequency was also not a statistically significant predictor (p = 0.107). However, regular donors had a lower likelihood of experiencing depressive symptoms compared to non-regular donors.

Voluntary blood donation is an important social campaign because blood is an irreplaceable medical resource (Makowicz et al., 2022). Increasing education and blood donation campaigns can increase donor participation, especially among young people. However, there are challenges in maintaining donor numbers, especially since a positive syphilis screening result can have a significant psychological impact on donors. Sexually transmitted infections (STIs), including syphilis, have a significant impact on mental health, especially for women. An STI diagnosis can lead to social stigma, anxiety, and decreased self-esteem (Santos et al., 2022; Ye et al., 2021). The relationship between syphilis seropositivity and depressive symptoms has been demonstrated in previous studies. Syphilis patients tend to have higher depression scores than healthy individuals (Purnamaningsih et al., 2022). A positive syphilis screening result in regular blood donors can also increase stress and anxiety, especially for those who have been donors for a long time and consider themselves healthy (Dorner & Csordás, 2024). The psychological impact of such a diagnosis can be perceived differently depending on

an individual's personal coping mechanisms and social capital; some may see it as a manageable health issue, while others may experience it as a profound loss of their social identity as a "healthy donor." The results of this study highlight the need for a more inclusive and educational blood donation policy. Blood donors who receive a positive STI screening result should be given adequate psychological support to reduce the emotional impact they experience. Concretely, this could include implementing a "warm handover" protocol where donors are immediately referred to counseling services upon notification, and integrating brief mental health screenings like the PHQ-2 into the standard PMI notification process. Blood donation campaigns also need to target at-risk groups with education on STI prevention and the importance of early detection (Osei-Boakye et al., 2024).

Treponema pallidum (TP), the causative agent of syphilis, can attack the central nervous system and cause neurosyphilis, which often mimics psychiatric disorders such as depression and psychosis (Köhler et al., 2017). Therefore, medical personnel need to raise awareness of the possibility of neurosyphilis in patients with unclear psychiatric symptoms. Screening instruments such as the Patient Health Questionnaire-9 (PHQ-9) are widely used to measure depression levels and have shown that syphilis patients have higher depression scores than the general population (Hailu Gebrie, 2018). In addition, the Family Support Scale (FSS) is used to assess the extent to which family support can help patients cope with the psychological impact of syphilis. Studies have shown that high family support can reduce anxiety and depression in STI patients. While these self-reported scales are useful, it is important to note that they may be subject to social desirability bias, where participants underreport symptoms due to the sensitive nature of syphilis. Future studies could use clinical interviews to provide a more objective assessment.

Syphilis not only affects mental health but also the sexual life of patients. As many as 46.51% of syphilis patients reported disturbances in their sexual life, such as decreased sexual desire and changes in their sexual practices (Bolmont et al., 2024). In another study, it was explained that mothers with congenital syphilis had lower sexual function, including arousal, orgasm, affective, and intimacy. It has been reported that women with depression have low activity in the hypothalamus, cingulate gyrus, and parahippocampal gyrus, areas of the limbic system involved in sexual arousal and pleasure (Santos et al., 2022). However, sexual dysfunction and depression can be a two-way directions, meaning one can worsen or trigger the other, and treatment of one can improve the other (C. Santos et al., 2022; Townsend, 2008). The relationship between STIs and depression is complex, STIs increasing the risk of depression due to social stigma and altered self-image, while depression increases risky sexual behaviour (Matovu et al., 2021). Therefore, a syndemic approach that combines psychosocial and medical interventions is needed in managing STI patients.

Depressive symptoms among syphilis-positive blood donors were associated with demographic and psychosocial factors. Family involvement and blood donation frequency showed significant associations in bivariate analysis, but they were not independent predictors after adjustment. Gender and age were identified as significant predictors of depressive symptoms. These findings highlight the importance of

post-screening counseling and psychosocial support for syphilis-positive blood donors.

FINANCIAL SUPPORT AND SPONSORSHIP

None.

CONFLICT OF INTEREST

There are no conflicts of interest.

ACKNOWLEDGEMENT

We sincerely thanks to the PMI Kota Surabaya for encouraging donors to participate in this study.

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