

Depression and alexithymia in patients with viral hepatitis (B)

الاكتئاب والأليكسيثيميا لدى مرضى التهاب الكبد الفيروسي (ب)

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Abstract :

This study aimed to identify the extent of depression and alexithymia in patients with hepatitis B. It included 52 patients and addressed the following questions:

- *Is there depression in patients with hepatitis B?*
- *Is there alexithymia in patients with viral hepatitis B?*
- *Are there gender- and diagnosis duration-based differences in depression?*
- *Are there gender- and diagnosis duration-based differences in Alexithymia?*
- *Is there a relationship between depression and alexithymia in the study sample?*

The study was based on the following tools:

Beck's Depression Inventory and the Toronto Alexithymia Scale (TAS-20) were used for quantitative and qualitative analysis. Data were processed using SPSS 25 with a descriptive and correlational approach.

Results indicated:

- *An average level of depression and alexithymia in patients.*
- *No significant gender or duration-based differences in depression.*
- *Significant gender and duration-based differences in alexithymia favoring females.*
- *A significant relationship between depression and alexithymia in hepatitis B patients.*

Keywords: Depression, Alexithymia, Viral Hepatitis B.

الملخص :

هدفت هذه الدراسة إلى تحديد مدى انتشار الاكتئاب وصعوبة التعبير عن المشاعر (الأليكسيثيميا) لدى مرضى التهاب الكبد الفيروسي (ب). شملت الدراسة 52 مريضاً وركزت على الإجابة عن الأسئلة التالية:

- هل يعاني مرضى التهاب الكبد الفيروسي (ب) من الاكتئاب؟
- هل يعاني مرضى التهاب الكبد الفيروسي (ب) من الأليكسيثيميا؟
- هل توجد فروق في الاكتئاب بناءً على النوع الاجتماعي أو مدة التشخيص؟
- هل توجد فروق في الأليكسيثيميا بناءً على النوع الاجتماعي أو مدة التشخيص؟
- هل توجد علاقة بين الاكتئاب والأليكسيثيميا لدى عينة الدراسة؟

اعتمدت الدراسة على الأدوات التالية: مقياس بيك للاكتئاب، ومقياس تورنتو لصعوبة التعبير عن المشاعر (TAS-20). تم تحليل البيانات باستخدام برنامج (spss25) وتم اتباع المنهج الوصفي وارتباطي.

النتائج:

- وجود مستوى متوسط من الاكتئاب وصعوبة التعبير عن المشاعر لدى المرضى.
- عدم وجود فروق ذات دلالة إحصائية في الاكتئاب بناءً على النوع الاجتماعي أو مدة التشخيص.
- وجود فروق ذات دلالة إحصائية في الأليكسيثيميا بناءً على النوع الاجتماعي ومدة التشخيص لصالح الإناث.
- وجود علاقة ذات دلالة إحصائية بين الاكتئاب وصعوبة التعبير عن المشاعر لدى مرضى التهاب الكبد الفيروسي (ب).

الكلمات المفتاحية: الاكتئاب، الأليكسيثيميا، التهاب الكبد الفيروسي (ب).



1. Introduction :

Health is generally considered a state of relative balance in the body's functions. It involves the science and art of preventing disease and promoting health through organized efforts by society, encompassing various areas and fields. Health is largely a relative concept, primarily based on maintaining balance in the body's functions. This balance results from the body's adaptation to harmful factors, whether mechanical, innate, or acquired.

Chronic diseases account for 59% of the 57 million deaths that occur annually worldwide. These diseases are the leading causes of death in both developing and developed countries (Al-Duq, 2011, p. 41). Chronic diseases are influenced by certain behavioral patterns, particularly those related to health practices, and by the absence of others. Consequently, chronic diseases have become a major cause of death and are strongly influenced by behavioral and personal factors. Among these diseases is viral hepatitis, which is considered one of the most serious infectious diseases. It causes the liver to enlarge and weaken, leading to permanent damage. The liver is one of the most vital organs in the human body, responsible for numerous critical functions such as metabolism, detoxification, and sugar storage. Any malfunction in the liver can cause a variety of symptoms, including fatigue, fever, muscle and joint pain, dizziness, loss of appetite, abdominal pain, and sometimes diarrhea (Al-Dahri, 2018, p. 230).

These complications can lead a person into a cycle of psychological disorders, the most significant of which is depression. Depression is a common symptom accompanying chronic diseases and is considered a mood disorder that severely impacts a person's mental and emotional well-being. Beck defines depression as an "exaggerated maladaptive response" that occurs as a result of negative perceptions of oneself, one's external circumstances, the future, or a combination of all three.

Depression is also characterized as an emotional disorder marked by a loss of evaluative capacity, weak resolve, feelings of resentment, low self-esteem, and guilt. It is further characterized by pessimism and self-depreciation (World Health Organization, DS, p. 16).

However, depression is not the only psychological disorder affecting people with chronic diseases. The shock of being diagnosed with such diseases can lead to psychological conditions that often accompany depression. One of these is alexithymia, a disorder characterized by difficulty in recognizing and distinguishing between emotions and the physical sensations they cause. Those with alexithymia also struggle to describe their feelings and understand the emotions of others. They often display a narrow range of perception and imagination, with difficulty in living out hopes and dreams.

Alexithymia is also known as a disorder of emotional expression, emotional dullness, or emotional aphasia, where there is a disconnect between emotions

and thoughts, which typically work in tandem. This disorder also reflects challenges in organizing emotional experiences, dreams, fantasies, and thinking based on reality rather than introspection. Alexithymia is considered a contributing factor to the development of psychosomatic disorders (Fasi, 2016, p. 22).

Although psychiatric sources indicate that modern medical statistics show the prevalence of alexithymia among the general healthy population, it is surprising how little attention the medical community gives to this condition. Both within medical circles and in their communication with the public, there seems to be a lack of awareness and education about alexithymia (Zaout, 2002, p. 25).

In conclusion, this study seeks to investigate the most prominent psychological disorders associated with hepatitis B virus carriers, particularly mood disorders such as depression and emotional disorders like alexithymia.

Based on the above, the following research questions are proposed:

- Is there a prevalence of depression among patients with hepatitis B?
- Is alexithymia present in patients with viral hepatitis B?
- Are there gender- and diagnosis-duration-related differences in depression?
- Are there gender- and diagnosis-duration-related differences in alexithymia?
- Is there a relationship between depression and alexithymia in the study sample?

2. Hypothesis:

- Patients with viral hepatitis B suffer from depression.
- Patients with viral hepatitis B suffer from alexithymia.
- There are differences between the sexes in depression scores in favor of females and are due to the period from diagnosis of the disease.
- There are differences between the sexes in the degrees of alexithymia in favor of females and are attributed to the period from diagnosis of the disease.
- There is a positive correlation between depression and alexithymia in patients with viral hepatitis B.

3. Existing literature:

3.1 Study by Zaatout Ramadan and Qureshi Abdul Karim (2002)

- Study Title: Masked Depression and its Relationship to Alexithymia and Death Anxiety among Somatized People
- Study Objectives: The study aimed to explore the relationship between masked depression, alexithymia, and death anxiety among somatized individuals, and to examine the influence of mediating variables such as age, gender, and educational level.
- Study Sample: The study involved 72 patients selected from a total of 2,000 cases attending public clinics in the city of Ouargla.

- Study Tools: The researcher utilized four measures: the Kroenke Somatization Diagnostic Criteria, the General Health Questionnaire (GHQ), the Toronto Alexithymia Scale (TAS-20), and the Death Anxiety Scale (DAS).

- Study Results:

- There is a positive correlation between depression and alexithymia among somatized individuals.

- There is a positive correlation between alexithymia and death anxiety among somatized individuals.

- There are no statistically significant differences in alexithymia based on age, gender, or educational level.

3.2 Al-Zahrani's study (2014):

- Study Title: The Effectiveness of a Cognitive-Behavioral Counseling Program in Reducing the Symptoms of Alexithymia Among a Sample of Depressed People

- Study Objectives: This study, one of the few Arab studies on alexithymia, aimed to assess the effectiveness of a cognitive-behavioral counseling program in reducing alexithymia symptoms among a sample of depressed Saudi individuals.

- Study Sample: The study included 54 depressed individuals who were attending psychological clinics.

- Study Tools: The researcher applied the Toronto Alexithymia Scale (TAS-20) and a cognitive-behavioral counseling program to the sample.

- Study Results: The results demonstrated that the counseling program was effective in reducing alexithymia symptoms in the participant

3.3 A study by (Gilbert et al., 2014)

- Study Title: Fear of Happiness and Empathy: Their Relationship to Depression, Alexithymia, and Security Associated with Depressive and Resistant Personality

- Study Objectives: The study aimed to investigate the relationship between alexithymia, fear of happiness, empathy, and their association with depression and personality traits.

- Study Sample: The sample included 52 British participants who were experiencing moderate to severe levels of depression.

- Study Tools: The study used scales measuring fear of happiness, empathy (both toward others and oneself), the Toronto Alexithymia Scale, an attachment scale, a social well-being scale, and a scale for depression, anxiety, and distress.

- Study Results:

- A strong correlation was found between fear of happiness, empathy, and alexithymia. Path analysis also revealed that fear of positive emotions fully

mediated the relationship between parental influence, alexithymia, and depression.

4. Basic concepts of the study:

4.1 Hepatitis B virus (HBV):

The liver is susceptible to various diseases, one of the most serious being Hepatitis B virus (HBV) infection. HBV is a viral infection that targets liver cells, causing inflammation of the liver. In some cases, this inflammation becomes chronic if it lasts longer than six months, increasing the risk of severe conditions such as liver failure. While most adults infected with HBV can recover, the symptoms vary from mild to severe and typically appear within the first four months of infection. Some individuals may be asymptomatic during the initial infection, while others may experience symptoms such as vomiting, fatigue, jaundice, dark urine, and abdominal pain. These symptoms usually last for several weeks, with rare cases resulting in death from the initial liver inflammation (Rubin et al., 2008, p. 638).

There are two forms of Hepatitis B infection:

- Acute: Lasting less than six months.
- Chronic: Lasting more than six months.

The risk of developing chronic HBV infection is lower when the infection occurs after puberty (up to 10%) compared to pre-puberty (up to 30%). Newborns have the highest risk of chronic infection, with rates reaching up to 95%. HBV infection progresses through three stages:

1- Pre-Icteric Phase: Characterized by abdominal pain, joint and muscle aches, fever, nausea, vomiting, diarrhea, and general weakness.

2- Icteric Phase: Marked by the darkening of urine and yellowing of the skin and eyes (jaundice).

3- Convalescent Phase: In this stage, most symptoms improve, but chronic HBV infection can lead to liver complications such as cirrhosis, liver cancer, or kidney diseases (Terrault et al., 2005).

Acute HBV infection is often associated with symptoms like general malaise, loss of appetite, nausea, vomiting, body aches, mild fever, dark urine, and jaundice. In some patients, severe liver inflammation can develop and may be fatal, while others may have asymptomatic infections that go undetected. Chronic HBV infection can result in liver cirrhosis and liver cancer, with approximately 50% of liver cancer cases in Europe being attributed to HBV and HCV infections (Gan et al., 2005). Alcohol consumption increases the risk of developing cirrhosis and liver cancer. Additionally, there is a link between HBV infection and kidney inflammation.

Acute HBV infection can also present with extrahepatic symptoms, such as:

- Acute Vasculitis (polyarteritis nodosa)
- Membranous Glomerulonephritis
- Porphyria Cutanea Tarda (most common in childhood) (Dienstag, 1981, pp. 45-57; Trepo, 2001, pp. 74-269).

4.2 Depression:

- Encyclopedia of Psychology (1977): Depression is described as an emotional state or mood characterized by feelings of inadequacy and despair, often accompanied by a general decline in mental and physical activity (Al-Hammadi, DS, p. 98).
- Diagnosis Guide for Mental Disorders issued by the Egyptian Psychiatric Association (1979): Depressive neurosis is marked by a pervasive mood of sadness and negative thinking, accompanied by an inability to cope with daily life, low energy, difficulty concentrating, fatigue, and sleep disturbances, most commonly insomnia (Guide to Diagnosing Mental Illnesses, 1979, p. 50).
- The MAYSARA Arabic Encyclopedia (2001): Depression is defined as a psychological disorder that may involve sleep or eating disturbances, poor concentration, work-related problems, and intense feelings of emptiness, guilt, and worthlessness, along with suicidal thoughts. Melancholic illness is distinguished from ordinary sadness following disappointment or loss. It can have psychological or biochemical components and may manifest in a manic phase (manic-depressive disorder). Many patients show significant improvement with psychotherapy and antidepressant medications (David B, Safwat F, DC, p. 25).
- Aaron T. Beck's Cognitive Theory of Depression: Beck, a prominent psychologist, proposed that depression is not solely caused by external events but is also influenced by the way individuals interpret these events. He suggested that people with depression tend to process information and experiences negatively, which sustains their depressive symptoms (Beck, A.T., 1967).

4.3 Alexithymia:

The concept of alexithymia, initially attributed to Sifneos in 1972, actually has its roots dating back almost half a century earlier. Ruesch (1984) noted deficiencies in verbal expression and diminished imaginative capacity in patients, a sentiment echoed by Ferenczi (1994) and Mealean (1949). The Paris Psychosomatic School (D. Marty & D. M'Uzan, 1963) observed a utilitarian mode of thinking they called "operative thinking," which lacked imaginative activities, even in dreams. This suggested a diminished ability to process preconscious material, leading to psychosomatic disorders. The Boston School

(Sifneos & Nemiah) further developed this concept, advocating for effective psychotherapeutic techniques. Despite some theoretical and practical disagreements, Sifneos is credited with coining the term "alexithymia," referring to a particular system of emotional regulation in his patients (Qureshi, 2008, p. 205-206).

The term "alexithymia" is derived from the Greek language, where:

"A" typically signifies negation, meaning absence or lack.

"Lex" comes from "lexis," meaning word or speech.

"Thymia" is from "thymos," meaning mood, emotion, feelings, or affect.

Thus, "alexithymia" refers to the difficulty or inability to express emotions or moods verbally. It represents a specific emotional management system, characterized by:

- Difficulty recognizing and distinguishing emotions from bodily sensations of emotional arousal.

- Challenges in verbally describing and expressing emotions to others.

- Limited imagination and reduced engagement in leisure activities.

- An outwardly focused cognitive style, directed toward the external world.

(Sifneos, 1972; Lasser, 1981, pp. 154, 708-710).

5. Materials and Methods:

Success in selecting the appropriate method that suits the nature of the problem being studied is crucial. Since this study seeks to examine the prevalence of depression and alexithymia in patients with viral hepatitis B, the researcher has chosen the descriptive method, as it is the most suitable for this type of investigation. By utilizing correlation and comparison methods, this approach enables the researcher to describe the relationship between variables and identify differences, both quantitatively and qualitatively.

5.1 Study sample:

The study involved 52 patients with hepatitis B virus who were selected deliberately. The study was conducted at the General Hospital Sanatorium-Batna (EPH) formerly known as Sanatorium. The sample is distributed according to the following characteristics:

- By sex:

Table 01. Showing the study sample by sex.

Sex	Repetition	percentage
Males	33	63.46 %
Females	19	36.53 %
Totale	52	100 %

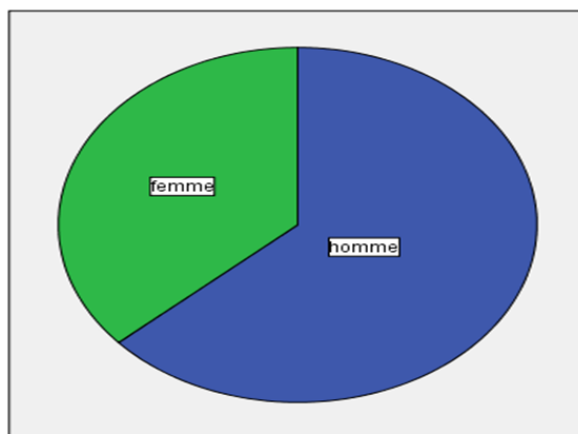


Fig 01. Graph indicating the ratio of males and females in the research sample

We can Note from Table 01 and Chart 01 that the largest proportion was in male patients at 63.46% while females at 36.53%.

- Duration of the diagnosis of the virus:

Table 02. Shows the duration of diagnosis of the virus for patients

Duration of diagnosis	Repetition	percentage
From the day of the diagnosis – 2 years later	28	53.84 %
3 years after the diagnosis -16 years later	24	46.15 %
Totale :	52	100 %

Table 02 shows the duration of the diagnosis of the virus to the patient, we note that the duration from the first day of the diagnosis to 2 years is the highest percentage estimated at 53.84% but by a small difference for the 3 to 16 years group which estimated at 46.15%.

5.2 Data collection tools:

To carry out the study, which was conducted at the General Hospital Sanatorium-Batna (EPH) for a duration of almost one year, we used two measures according to the following:

5.2.1 Beck Depression Test:

The Beck Depression Inventory (BDI) is a method for estimating the severity and type of depression. It represents one of the earliest and most successful attempts to measure the degree of depression in an individual's personality. The scale was developed by the renowned American psychiatrist Aaron Beck and was later translated into Arabic by Dr. Abdul Sattar Ibrahim, a professor at the College of Medicine at King Faisal University. This scale consists of 21 groups of questions, with each group describing one of the clinical symptoms of depression. Individuals who wish to assess their level of depression are asked to read each statement in a group, determine which one applies to them and describes their condition and feelings, and then circle the corresponding number.

In its current version, the questionnaire is designed for individuals aged 13 and above. It covers various depressive symptoms, such as hopelessness and irritability, cognitive symptoms like guilt or feelings of punishment, as well as physical symptoms, including fatigue, weight loss, and loss of interest in sex.

As for the Psychometric Properties of the Beck Depression Inventory:

- Validity: The validity of the test in the Algerian context was assessed by the researcher Qanoun Khamisa in a master's thesis. Using a peripheral comparison method, the discriminative validity was calculated. The resulting t-value was estimated at 5.47, which is significant at the 0.01 level, indicating the strong validity of the test.

- Reliability: The reliability of the test was determined by splitting it in half and calculating the Pearson correlation coefficient. The coefficient was then adjusted using the Spearman-Brown formula, yielding a value of 0.82, which is significant at the 0.01 level. This indicates the test has strong reliability (Qanoun K., 2007, p. 77).

5.2.2 Toronto alexithymia scale (TAS -20):

The Toronto Alexithymia Scale (TAS) was developed by Bagby, Ryan, Taylor, and others in 1994. Initially, it contained 26 items, but it was later revised to the well-known "TAS-20," which now contains 20 items distributed across three key dimensions. These dimensions are:

- Difficulty Describing Feelings (DDF): This refers to the difficulty in articulating one's emotions. This axis includes 5 items, corresponding to the following numbers: 2, 4, 7, 12, and 17.

- Difficulty Identifying Feelings (DIF): This refers to the difficulty in recognizing emotions and distinguishing them from physical sensations. This axis comprises 7 items, corresponding to the following numbers: 1, 3, 6, 9, 11, 13, and 14.

- Externally Oriented Thinking (EOT): This refers to an outward-focused thinking style, also known as practical thinking. It includes 8 items, corresponding to the following numbers: 5, 8, 10, 15, 16, 18, 19, and 20.

The scale is rated on a 1 to 5 scale, and several items are reverse-scored (4, 5, 10, 18, 19). The scoring system for TAS-20 is as follows:

A score of 56 or higher indicates high alexithymia.

A score between 45 and 55 indicates moderate alexithymia.

A score of 44 or lower indicates no alexithymia.

The TAS-20 has demonstrated good internal consistency, with Cronbach's alpha greater than 0.70, and it also shows good validity, as confirmed by internal consistency measurements (Fasi, 2016, p. 151).

6. Statistical Analysis and Results:

The Statistical Package for the Social Sciences, version 25 (SPSS25) was used to calculate the relationship and differences between the variables, and the tests that fit the research hypotheses were used, which are as follows:

- Correlation coefficient: (R person) to calculate the correlation between depression and alexithymia.

- T-test: to detect differences between depression and alexithymia due to the gender variable

- T-test: to detect differences between depression and alexithymia due to the variable period for diagnosing the virus

- Observation: To accurately examine and analyze the study population

- The semi-directed clinical interview: to collect information and data in studying individuals, as it is the most prominent means of achieving a direct relationship between the examiner and the examined.

6.1 Presentation and analysis of the results of the first hypothesis:
“Patients with viral hepatitis B suffer from depression”

Table 03. Shows the level of depression in patients with viral hepatitis B.

Variables	Sample	SMA	standard deviation
Depression	52	20.7	12.5

From the previous table, it appears that the depression levels in the sample had an arithmetic mean of 20.7, with a standard deviation of 12.5. According to the Beck International Depression Scale, this range (19 to 29) indicates moderate depression. Thus, it can be concluded that the sample experiences depression at a moderate level.

The table also shows that the research sample exhibits an average level of depression, which is consistent with the findings of Qanoun Khomisa (2007) in her study titled "Perceived Social Support and Its Relationship to Depression Among People with Infectious Diseases (Hepatitis C Patients)." Her study demonstrated that lower social support leads to higher levels of depression in the sample, based on the variables studied.

Additionally, the results of Gilbert and his colleagues' (2014) study revealed that fear of positive emotions contributes to moderate to severe levels of depression. This underscores the importance of the quality of emotions in determining depression levels in patients. Similarly, Zaatout and Qureshi's (2002) study, "Masked Depression and Its Relationship to Alexithymia and Death Anxiety Among Somatic Patients," found a correlation between depression and social interaction, emphasizing the role of an individual's physical health, which is often linked to concepts of death.

Finally, the study by Beavers and Miller (2005), "The Effectiveness of a Cognitive Therapy Program to Modify False Thoughts and Depressive Symptoms," demonstrated that cognitive therapy significantly reduced depressive symptoms. Their results showed a statistically significant relationship between false beliefs and depression, with a decrease in depressive symptoms in individuals who underwent cognitive therapy compared to those who did not.

6.2 Presentation and analysis of the results of the second hypothesis: "Patients with viral hepatitis B suffer from alexithymia"

Table 04. shows the level of alexithymia in patients with viral hepatitis B.

Variables	Sample	SMA	standard deviation
Alexithymia	52	57.6	12.2

The table shows that the alexithymia levels in the study sample had an arithmetic mean of 57.6 and a standard deviation of 12.20. According to the TAS-20 test, this score falls within the range of 51 to 61, indicating a moderate level of alexithymia in the sample.

The data suggests that the study sample experiences an average level of alexithymia, also referred to as "psychological secrecy," which can pose risks to an individual's mental health and expose them to various psychological disorders. This finding is consistent with the study by Fasi Amal (2016) titled "Basic Depression and Alexithymia in Cancer as a Distinct Mental Activity," which demonstrated that cancer patients exhibit mental activity characterized by a predominance of alexithymia. The similarity of variables, such as the continuous physical and psychological impact of the disease, aligns this study with our findings.

Furthermore, the study by Zaatout and Qureshi (2002), titled "Masked Depression and Its Relationship to Alexithymia and Death Anxiety Among Somatized Patients," also found a positive correlation between alexithymia (psychological secrecy) and death anxiety in somatized individuals. This highlights the psychological impact of illnesses related to death and their role in the emergence of alexithymia.

Additionally, the studies by Hussein and Ahmed (2014) and Heiberg (1976) both contributed to understanding the significant influence of family factors on the development of alexithymic traits. Hussein and Ahmed's study found that perceived parental acceptance-rejection was statistically linked to alexithymia among students, with parental rejection and lack of social support being positively associated with the condition. This underscores the role of family dynamics in the severity of psychological symptoms accompanying physical illnesses.

Finally, a study by Benjamins B, Ronald O, et al. (2006), titled "A Controlled Study of Alexithymia in Adolescents with Persistent Physical Disorders," showed that the prevalence of alexithymia was significantly higher in the sample with persistent physical disorders compared to the control group (59% vs. 1%). This finding aligns with our study, as hepatitis B is a chronic illness that remains

with a person throughout their life, similar to other persistent physical conditions.

6.3 Presentation and analysis of the results of the third hypothesis:

“There are differences between the sexes in depression scores in favor of females and are due to the period from diagnosis of the disease”

Table 05. Shows the differences between genders and the period from diagnosis with the disease and its relation with Depression among the study sample.

Depression	variables		Sample	SMA	Standard deviation	T-test	significance level at 0.05
	Sex	M	33	19.2	12.7	1.41	significant
		F	19	23.2	11.1		
	Duration of diagnosis of the disease	From the day of the diagnosis – 2 years later	28	24.5	11.4	2.53	Unsignificant
		3 years after the diagnosis -16 years later	24	16.2	11.8		

The table shows that there are no significant differences between the sexes in terms of depression, as the T-test value is 1.141, which is not statistically significant at the 0.05 level. However, for the variable related to the duration of diagnosis, the T-test value is 2.53, which is significant at the 0.05 level. This indicates that there are differences in favor of the more recent period, specifically the time from diagnosis to 2 years, with an arithmetic mean of 24.5 and a standard deviation of 11.8. This mean is higher than the mean value for the longer duration group, which spans from 3 to 16 years.

The results from the table suggest that there are no significant differences between the sexes regarding depression levels. This finding is consistent with the results of Qanoon Khomisa’s (2007) study, titled "Perceived Social Support and Its Relationship to Depression Among People with Infectious Diseases (Hepatitis C Patients)." That study similarly found no statistically significant differences between genders in perceived social support and depression among individuals with hepatitis C.

However, our results contradict those of Mohamed Abdel-Rahman Al-Shuqairat's (2012) study, which examined sex differences in the relationship between body esteem, depression, social fears, and self-esteem among university students. His study found that females scored significantly higher on both the depression and social fears scales compared to males. Additionally, there was a significant correlation between depression and body esteem in both sexes, with females showing a stronger correlation coefficient.

Regarding the variable of illness duration, we were unable to find relevant studies that could be referenced, as previous research did not focus on this aspect. Therefore, this study offers a unique contribution by highlighting the variable of disease duration and its impact, providing valuable scientific enrichment in this area.

6.4 Presentation and analysis of the results of the Fourth hypothesis:

“There are differences between the sexes in the degrees of alexithymia in favor of females and are attributed to the period from diagnosis of the disease”

Table 06. shows the differences between genders and the period from diagnosis with the disease and its relation with Alexithymia among the study sample.

Alexithymia	variables		Sample	SMA	Standard deviation	T-test	significance level at 0.05
	Sex	M	33	54.5	11.9	2.35	significant
		F	19	63	13.2		
	Duration of diagnosis of the disease	From the day of the diagnosis – 2 years later	28	60.9	11.5	2.05	significant
		3 years after the diagnosis -16 years later	24	53.7	13.6		

The table shows that the T-test value for the alexithymia variable is significant at the 0.05 significance level, indicating differences between the sexes in favor of females. The arithmetic mean for females was 63, with a standard deviation of 13.2, which is higher than the arithmetic mean for males, which was estimated at 54.5 with a standard deviation of 11.9.

Additionally, there are differences based on the duration of the illness, as the T-test value was 2.05, which is also significant at the 0.05 level. The arithmetic mean for alexithymia was 60.9, with a standard deviation of 11.5. This score, according to the TAS-20 alexithymia scale, falls within the "high alexithymia" range (61 and above), indicating that this category tends to exhibit high levels of emotional secrecy.

These results contradict the findings of the study by Athanasios Tselebis (2010), which aimed to investigate the relationship between alexithymia, anxiety, and depression among a sample of Greeks with chronic obstructive pulmonary disease. That study found no statistically significant differences in alexithymia levels based on gender or age.

Similarly, the results are in opposition to Zaout Ramadan's (2002) study, "Masked Depression and its Relationship to Alexithymia and Death Anxiety Among Somatized Patients." Ramadan's study explored the relationship between masked depression, alexithymia, and death anxiety, as well as the influence of mediating variables such as age, gender, and educational level. His findings showed no statistically significant differences in alexithymia based on age, gender, or educational level.

Furthermore, the study by Karukivi (2011), "The Relationship Between Alexithymia and Mental Health in Adolescents – Finland 2011," aimed to investigate possible gender differences in alexithymia. The results showed no significant gender differences, with an average alexithymia score of 44.7 for females and 46.0 for males. This finding was also supported by Joukamaa et al. (2007), who found similar alexithymia levels between the sexes.

The differences observed in the current study between males and females may be attributed to the nature of the disease as an infectious one, as well as societal perceptions in Algeria. Infectious diseases are often associated with avoidance, and this could have a greater psychological impact on females than males. Moreover, Algerian society tends to view females in traditional roles, such as homemakers and caregivers. Being perceived as a carrier of an infectious virus like hepatitis B, which is transmitted through the blood, could lead to social stigma for females. This stigma may result in what is known as a "narcissistic wound," causing females to be more secretive or to score higher on alexithymia than men. This supports the hypothesis of this study.

As for the duration of infection, no previous studies were found that specifically examined this variable. Therefore, it can be said that this study is one of the few, if not the only, studies to focus on this variable, providing a unique contribution to the research in this area.

6.5 Presentation and analysis of the results of the Fifth hypothesis:

“There is a positive correlation between depression and alexithymia in patients with viral hepatitis B”

Table 07. shows the relationship between depression and alexithymia

variables	Sample	SMA	Standard deviation	R.Person	significance level at 0.05
Depression	52	20.7	12.5	0.31	significant
Alexithymia		57.6	12.5		

Table (07) shows that the Pearson correlation coefficient is significant at the 0.05 level. The sample's depression had an arithmetic mean of 20.7 and a standard deviation of 12.5. Additionally, alexithymia in the sample had an arithmetic mean of 57.6 and a standard deviation of 12.20, indicating that the hypothesis has been confirmed.

The results from the table demonstrate a positive correlation between depression and alexithymia in patients with viral hepatitis B. This finding is consistent with Fasi Amal's (2016) study, which explored basic depression and alexithymia in cancer patients, viewing it as a distinct mental activity. Her study revealed a correlation between basic depression and alexithymia in cancer patients.

Similarly, the study by Gilbert and colleagues (2014), titled "Fear of Happiness, Empathy, and Its Relationship with Depression, Alexithymia, and Security Attached to Personality," also showed a correlation. Path analysis in their study indicated that fear of positive emotions fully mediates the relationship between alexithymia and depression.

Athanasios Tselebis's (2010) study, which examined the relationship between alexithymia, anxiety, and depression, found a correlation between emotional secrecy (alexithymia), anxiety, and depression. Likewise, Zatout Ramadan (2002) studied "Masked Depression and Its Relationship to Alexithymia and

Death Anxiety Among Somatics" and found a positive correlation between depression and alexithymia in somatic patients.

Across all studies examining both depression and alexithymia, the results have been consistent: there is a correlation between the two variables. Notably, the studies by Zatout Ramadan (2002) and Fasi Amal (2016) specifically identified types of depression, such as basic depression and masked depression, and also found a correlation between these forms of depression and alexithymia.

All the studies that investigated these variables reached the same conclusion, which aligns with the findings of this study: there is a positive correlation between depression and alexithymia in patients with viral hepatitis B. Therefore, the hypothesis has been confirmed.

7. Conclusion

The study dealt with depression and alexithymia in patients with viral hepatitis (B), and the results obtained allowed us to determine the importance of psychological disorders that patients with viral hepatitis (B) suffer from. The study concluded that

- Hepatitis B virus carriers suffer from a moderate degree of depression and alexithymia
- There are no differences in depression according to gender
- As for the variable period for diagnosing the virus, we found that indeed there are differences in the study sample.
- There were also differences in alexithymia according to the variable of gender and the period for diagnosing with the virus.

Finally, the study concluded that there is a relationship between depression and alexithymia in patients with viral hepatitis B.

After identifying the psychological disorders faced by patients with hepatitis B, Which includes Alexithymia and depression, This study focused on an important element represented in the variable “duration of the infection”, which was not given its due in previous studies, as it was found that this variable links or separates the study variables with each other in a direct manner. The results showed that increasing the duration of infection with the virus leads to a decrease in psychological symptoms.

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