

The Relationship between Health Literacy of Patients with Human Immunodeficiency Virus and Their Quality of Life

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Abstract

Background: Health literacy is a critical component of individual and public health, that impacts personal health outcomes. Patients with low health literacy may struggle to navigate the healthcare system, interpret medical terminology, and follow instructions for medications and treatments, leading to poor health outcomes and reduced quality of life. **Objective:** To determine the relationship between the health literacy of patients with Human Immunodeficiency Virus and their quality of life. **Setting:** The study was conducted in the Human Immunodeficiency Virus Outpatient clinic at the Alexandria Fever Hospital which is affiliated with the Ministry of Health and Population. **Subjects:** A convenience sample of 245 adult HIV patients' was selected from above mentioned setting. **Tools:** two tools were used. Tool I: Human Immuno Deficiency Virus (HIV) Patients' Health Literacy Assessment Scale (HPHLAS), Tool II: Human Immuno Deficiency Virus (HIV) Patients' Quality of Life Assessment Scale (HPQOLAS). **Results:** It was found that more than half of HIV patients had a moderate level of health literacy and more than three-quarters of patients had a moderate level of quality of life. Also, there were statistically significant positive correlations between health literacy and quality of life as $p < (0.001)$. **Conclusion:** HL is closely related to the quality of life; individuals with high health literacy are more likely to have better health outcomes and better quality of life than those with low health literacy **Recommendations:** Provide regular education sessions to reinforce important information and promote ongoing learning for HIV patients.

Keywords: Health Literacy, Quality of Life, Human Immunodeficiency Virus.

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Introduction

Patients' health information is crucial for providing high-quality healthcare and improving patient outcomes. It plays a significant role in diagnosis, treatment, preventive care, coordination of care, research, quality improvement, and patient empowerment. Health information and health literacy are closely related concepts. Health literacy (HL) as a term first proposed in the 1970s concerns the knowledge and competencies of individuals necessary for meeting the complex health demands of modern society. It is defined as the capacity of an individual to obtain, interpret, and understand basic health information and services in health-enhancing ways. It is now understood as a

social determinant of health impacting health outcomes for patients with various conditions (Hecht et al., 2019., Hulen, 2021., Rademakers et al., 2020.,).

Also, it linked literacy to people's knowledge, motivation, and competencies to access, understand, appraise, and apply health information to make judgments and decisions in everyday life concerning healthcare, disease prevention, and health promotion to maintain or improve the quality of life during the life course (Crawford & Yoost, 2021). Health literacy principles based on seven principles provide a framework for developing and implementing effective health communication and interventions these are; use of plain language, audience-centered, use of visual aids, health information

access, empowerment and active participation, health navigation and evaluation and quality improvement (Byrne& Baldwin, 2022).

There are many types/ levels of HL such as; functional, interactive, communicative, representative, cultural, numeracy, and critical health literacy (Harris &Mistry, 2021). Health literacy allows patients to take control of their health status by making smart healthcare choices, improving their communication with health staff, and equipping them with information to manage their condition in medical settings (Ishikawa et al., 2018). Also, it allows the patients to follow the instructions for their treatment, improve signs & symptoms, decrease stay in the hospital, enhance self-care practices, and increase the quality of patient outcomes (Netemeyer et al., 2020). Low health literacy among patients is associated with a limited understanding of verbal and written medical instruction, limited knowledge of healthcare services, a high risk of frequent hospitalization, high mortality rate, decreased probability of screening and prevention, poor decisions regarding patient's health care or following instructions about medications and health maintenance behaviors (Oedekoven et al., 2019).

Health literacy has a greater impact on patient health outcomes and their quality of life (Gaffari-Fam et al., 2020). WHO recognizes that quality of life is a complex and multidimensional concept that can vary between individuals and cultures. It involves many types of quality of life such as; Physical well-being, Mental and emotional, Social, Spiritual and cultural, Functional and financial. Several factors can affect an individual's quality of life. These factors can vary from person to person, but some common ones include; physical and mental health, relationships and social support, economic status, education and personal development, environment, safety, and security (Efficace & Jacobs, 2014).

Positive QOL helps patients to ensure that they receive the best possible care and treatment. It helps to improve patients' safety and reduce the risk of errors and adverse events, and it helps to improve the efficiency of care delivery and make the best use of resources especially among those patients with serious fetal diseases such as cardiovascular disease, renal disease and Immunodeficiency Virus disease (HIV). One of the most common diseases that affects the QOL among patients is HIV (Algaralleh et al .,2020).

Human immunodeficiency viruses (HIV) are one of the leading causes of disability and mortality worldwide. Living with HIV is accompanied by many stressors, and stressful life events could lead to the Progress of Acquired Immunodeficiency Syndrome (AIDS). AIDS and many other health problems, thereby affecting the physical, psychological, and bodily health of the person. Also, HIV is no longer a dead disease, but a Long-term manageable condition if diagnosed on time and received good treatment, and then HIV patients have a normal life expectancy (Weinstein, et al., 2023). One of the factors causing the development of HIV transmission is the risky behavior of self-exposure which occurs due to a person's low health literacy due to a lack of information, misconceptions, poor awareness about preventive measures, and self-protect instructions (Wolf, et al.,2020).

Aims of the Study

This study aims to Determine the relationship between the health literacy of patients with Human Immunodeficiency Virus and their quality of life.

Research questions

- What are the levels of health literacy of patients with Human Immunodeficiency Virus?
- What is the level of quality of life of patients with Human Immunodeficiency Virus?

- Is there a relationship between the health literacy of patients with Human Immunodeficiency Virus and their quality of life?

Materials and Method

Materials

Design: A descriptive correlation research design was used to conduct this study.

Setting: The study was conducted in the Human Immunodeficiency Virus Outpatient Clinic at the Alexandria Fever Hospital affiliated with the Ministry of Health and Population. It provides health care services for patients in Alexandria and Marsa Matrouh governorate. The official work time of the outpatient clinic is from Saturday to Thursday from 8 am to 2 pm except for official vacations. It consists of 2 rooms to provide medication, medical detection & counseling, nursing counseling, and health education.

Subjects: A convenience sample of 245 adult HIV patients' was selected from above mentioned setting. Patients were selected according to the inclusion criteria such as; Patients diagnosed with HIV for not less than 6 months and they could read and write.

Tools: Two tools were used for data collection in this study:

Tool I: Human Immuno Deficiency Virus (HIV) Patients' Health Literacy Assessment Scale (HPLAS)

This tool was developed by the researcher based on a review of relevant recent literature (Rachmani & Nurjanah 2019, Uwamahoro 2020; Mialhe & Sampaio 2022). It was used to assess the HIV patients' health literacy. *This tool will be divided into 2 parts:*

First part: Sociodemographic and clinical data: Socio-demographics encompasses; the patient's name, age, sex, educational level, job, income, marital status, housing condition, navigation to get

information, and sources of information. Clinical data encompasses of duration of suffering the disease and mode of transmission; which includes drug addiction and other methods, associated disease or physical problems, and family history of HIV.

Second part: HIV patients' health literacy Scale: It was used to measure patients' health literacy. Patients' responses will be scored on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). It consisted of 65 items divided into four dimensions: **First, functional health literacy** includes 36 items which are divided into 4 subscales such as; a1. disease nature includes 5 items, a2. disease transmission includes items a3. diagnostic measures include 4 items, a4. disease prevention includes 5 items and a5. disease medication includes 2 items. **b. patients' reading ability to health information** includes 5 items **c. seeking web-based health information** includes 6 items **d. The patient's understanding of health information** includes 4 items. **Second, Interactive health literacy** includes 13 items, which are divided into three subscales; **a. patient's engagement with health care providers** includes 5 items, **b. navigating the health care system** includes 5 items and **c. social support** includes 3 items. **Third, Representative health literacy** includes 7 items which are divided into actively managing my health and 7 items. **Fourth, Critical health literacy**, which includes 9 items.

The total scoring system of this scale will range from 65 to 325 which will be distributed as follows:

- Low patient's health literacy level: $65 \leq 151$ (Less than 33.3%).
- Moderate patient's health literacy level: $152 \leq 238$ ($\geq 33.3-66.7\%$).
- High patient's health literacy level: $239 \leq 325$ ($> 66.7\%$)

Tool II: Human Immuno Deficiency Virus (HIV) Patients' Quality of Life Assessment Scale (HPOOLAS)

This tool was developed by WHO (2020) and adopted by the researcher to assess the quality of life of HIV patients. It consisted of 47 items with 5 points Likert scale ranging from strongly disagree (1) to strongly agree (5). The scale is divided into seven dimensions: *First*, the physical domain includes 12 items. *Second*, the psychological domain includes 17 items. *Third*, the social domain includes 5 items. *Fourth*, the economic domain includes 3 items. *Fifth*, the environmental domain includes 4 items. *Sixth*, the vocational domain includes 3 items. Finally *Seventh*, the spiritual domain includes 3 items.

Method

- Approval from the Research Ethics Committee of the Faculty of Nursing Alexandria University will be obtained.
- Official permission to conduct the study was obtained from the Dean of the Faculty of Nursing and the Director of Alexandria Fever Hospital.
- An Approval from the Training unit & Approval of the Vice-dean of the Ministry of Health in Alexandria.
- An Approval of the Director of Alexandria Fever Hospital, National Program for AIDS Control, Approval of the AIDS official in Alexandria Governorate, and Approval from the Research Ethics Committee, Central Administration Research, and Health Development at the Ministry of Health and Population.
- Tool I was developed by the researcher and tool II was adapted after reviewing the related literature.
- All the Study Tools were translated into Arabic language by the researcher and back to English to check their feasibility.
- Tools' content validity was tested by a jury of five experts in the related fields.
- A pilot study was carried out on 25 patients 10% of the sample size.

- Tools' reliability was tested using Cronbach's Alpha.
- Data was collected through;
 - after a detailed explanation of the aim of the study, clarification of how to fill the study tools, and the time that the patients had to return it to the researcher
 - each participant received the study tools during his/her visit to the previously mentioned setting.
 - Data were collected from the HIV patients during the morning shift only at the HIV outpatient clinic according to patients' schedules for follow-up visits.
 - Study tools were distributed to the patient's hand by hand and asked to fill them and return them to the researcher and the researcher responded to patients' questions.
 - Each patient took about 20 minutes to fill out the questionnaire. Data were collected over one month from 30- 6-2023 to 30-7-2023.
- After completion of the data collection, the necessary statistical analysis was done.

Ethical Considerations

Written informed consent was obtained from each patient before data collection and after an explanation of the aim of the study. Confidentiality of the collected data was assured. The subjects were assured that their participation was voluntary and they had the right to withdraw from the study at any time. Anonymity was ascertained. The privacy of the patients was ensured.

Statistical Analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using numbers and percentages. The Kolmogorov-Smirnov test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean,

standard deviation, median, and. The significance of the obtained results was judged at the 5% level. Tests were used: 1- Chi-square test.

2- Fisher's Exact or Monte Carlo correction.

3- Pearson coefficient. 4- Cronbach's Alpha test.

Results

Table 1 shows the distribution of HIV patients according to their socio-demographic data; it was noticed that less than half of patients their age were from 25 to less than 35 years old, more than three-quarters of them were male, while half of them were single, nearly more than one-third of patients had Bachelor' degree, and the majority were Muslim (45.3%, 82.9%, 46.1%, 35.1%, 99,1%) respectively. Also, more than two-thirds of the studied patients had an occupation, nearly more than half had manual work, nearly half the percentage of patients had enough economic status, and the majority of them were Egyptian (69.4%, 56.5%, 42.9%, and 99.2%) respectively. Also, nearly three-quarters of patients' housing conditions were average, nearly the majority of patients navigate to get information about their disease, and the majority got the information from the internet (73.5%, 89.8%, and 99.5%) respectively.

Table 2 shows the distribution of HIV patients according to clinical data. It was noted that less than three-quarters of patients (71.0 %) suffered from HIV disease in a period ranging from one to less than five years. Also, the disease was transmitted to more than three-quarters (82.0%) of them by sexual method and the majority (95.5%) of them did not complain of any associated disease or physical problems. Also, nearly more than two-thirds (69.8%) of HIV patients had no family history of HIV. While (30.2%) of patients had a positive family history and more than half (54.1%) of them were the husband had HIV.

Table 3 shows the distribution of the studied patients according to the overall percent score of Health literacy levels. It was found that more than half (53.1%) of patients had a moderate level of health literacy.

Table 4 shows the Distribution of the studied patients according to the overall percent score of Quality of Life Assessment levels; the result showed that more than three-quarters of patients had a moderate level of quality of life (80.0%).

Table 5 represents the correlation between health literacy and quality of life; this table shows that there were statistically significant positive correlations between health literacy and quality of life as $p < (0.001)$.

Table 6 represents the relation between the level of overall percent score of health literacy levels and socio-demographic data; showing that there were statistically significant positive relations between the health literacy levels and all items of sociodemographic data except; religion, race, or ethnicity which are your sources of information?

Table 7 illustrates the relation between levels of overall percent score of HIV Patients' Quality of Life scale and socio-demographic data; showed that there were statistically significant positive relations between quality of life and all items of sociodemographic data except; religion, economic status, race or ethnicity, housing condition and which are your sources of information?

Discussion

Health literacy (HL) interventions for people living with HIV focus on adherence, treatment-related skills, and HIV-related knowledge. HL had a significant impact on health-related outcomes and the quality of life among patients living with HIV. Sufficient HL enhances the health of HIV patients, while low HL encounters more disease-related complications, more

difficulty understanding health-related information, and low adherence to HIV treatment (Vamos et al., 2020).

Positive QOL helps patients ensure they receive the best possible care and treatment. Also, it helps to improve patients' safety, reduce the risk of errors, and adverse events, improve the efficiency of care delivery, and make the best use of resources especially among those patients (Suleiman et al., 2020). So, it was important to focus on a broad understanding of the complexity of HL and the quality of life among HIV patients due to lifelong treatment and the need to be checked regularly at the hospital. Therefore, this study was carried out to determine the relationship between patients' health literacy with the Human Immunodeficiency Virus and their quality of life (Zibellini et al., 2021).

Regarding the overall percent score of health literacy levels; the results revealed that the majority of patients had a moderate level of health literacy. These results came in congruence with Freibott et al. (2022); Mukamba et al (2023) who found patients with HIV have moderate levels of health literacy.

From the researcher's point of view, moderate health literacy levels might be due to the majority of studied patients being of early adult ages (25 to less than 35 years), with bachelor's degree education, and socioeconomic status are adequate. Furthermore, health literacy levels play a significant role in the overall well-being and outcomes of HIV patients to support them with lifelong treatment and involve them in complex medication regimens. Also, patients' ability to understand and follow healthcare providers' instructions and written health information is crucial for effective communication and improved health outcomes.

Health literacy enables patients to comprehend these aspects of disease management and actively participate in their care, leading to better health

outcomes. Also, HIV patients often face complex decisions related to treatment options, disclosure of their HIV status, and lifestyle choices. So, Health literacy equips individuals with the necessary knowledge and skills to understand the available choices, weigh the risks and benefits, and make informed decisions aligned with their values and preferences. Health literacy empowers HIV patients to become active participants in their healthcare. It enables them to ask questions, seek clarification, and advocate for their needs during healthcare encounters.

From the previous result it can be concluded that the first question was answered which was; What is the level of health literacy of patients with Human Immunodeficiency Virus?

According to overall HIV patients' Quality of Life Assessment levels; it was found that; more than three-quarters of patients had a moderate level of quality of life. These results came in congruence with Osei-Yeboah et al. (2017) and Palwe et al., (2018) who found that among the study population, 79.75% were graded as presenting with an excellent overall quality of life. Also, Ashry et al. (2017) found that; the overall HRQOL of the HIV are positive group.

From the researcher's point of view; Quality of life plays a fundamental role in promoting adherence to HIV treatment regimens because HIV is a chronic condition that requires lifelong management. Also, enhancing physical well-being can contribute to reduced symptom burden, improved functional status, and an overall better quality of life. Additionally, improving the quality of life helps address these psychological challenges, leading to better mental health outcomes, and positive mental well-being can contribute to better-coping mechanisms functioning.

Furthermore, Quality of life is closely linked to social support and connectedness,

which are essential for HIV patients. A supportive social network and access to community resources can provide emotional and practical assistance, reduce stigma, and enhance overall well-being. So, by promoting quality of life, individuals with HIV can be more actively engaged in their communities, fostering a sense of belonging and connection. Finally, quality of life empowers individuals with HIV to actively participate in their healthcare decision-making and self-management; by providing education, resources, and support, individuals can develop the necessary skills and knowledge to manage their condition effectively.

From the previous result it can concluded that the second question was answered which was; What is the level of quality of life of patients with Human Immunodeficiency Virus?

In the present study, we illustrated that there were statistically significant positive correlations between health literacy and quality of life. These results were consistent with Kever and Chukwu, (2022) who found that; certain health literacy domains were found to be associated with the level of well-being of the respondent's quality of life. Also, Schrauben et al. (2020) reported that health literacy has a greater influence on health-related behaviors and awareness than disease-specific knowledge.

Moreover, Nacanabo et al. (2021) found that there was a significant correlation between the HL and HRQoL scales (r from 0.31 to 0.49). Additionally, Rodkjaer et al. (2023) illustrated that several reasons may explain why HIV cases with high health literacy levels have a higher QOL than those with low health literacy levels, cases with higher health literacy levels may be more prone to exposure to health-related information, which provided by medical professionals.

From the researcher's point of view; individuals with higher health literacy levels are often better equipped to advocate

for their health needs, seek second opinions, and engage in shared decision-making with healthcare professionals. This empowerment can lead to increased satisfaction with healthcare experiences and a greater sense of control over one's health, positively impacting quality of life.

From the previous result it can concluded that the third question was answered which was; Is there a relationship between health literacy of patients with Human Immunodeficiency Virus and their quality of life?

The present study, findings showed that; there were statistically significant positive relations between health literacy levels and age, education, and sex. In relation to patients' age in which young age who aged between 18 to 25 years old had a high health literacy level, this finding can be justified by the fact that the young are interested, navigate any information, and easily access health care facilities.

These results came consistent with a study done by Yu et al. (2023) pointed out that young patients aged between 18 to 25 years old had a high. Also, confirms that health literacy had a significant influence on health outcomes in different social strata, with lower health literacy being associated with a higher prevalence of chronic diseases and lower self-rated health. Also, Mehralian et al. (2023) reported a significant correlation between health literacy and quality of life among older people, with higher health literacy being associated with better quality of life.

In the same line, Bíró et al. (2021) found that; educational attainment was an important determinant of health literacy. Also, Nair et al. (2022) found that; health literacy levels were significantly associated with gender and education, with women and those with higher education levels having higher health literacy. Also, Paakkari et al. (2022) found that; health literacy was an independent factor

explaining disparities in health outcomes among adolescents.

Moreover, Rodkjaer et al. (2023) found that participants who lived alone had statistically significantly lower health literacy scores compared to participants living with a partner. Participants who work had statistically significantly higher health literacy scores compared to those not in employment. Also, Poojar et al. (2023). found a statistically significant increase in the HL scores based on the educational status of the participants seen

This result is in line with Rodkjaer et al (2023) who found the majority of studied patients' Perceived HL difficulties were markedly higher in people with lower incomes and educational levels, who live alone, and who are of non-Danish ethnicity despite a relatively highly educated population, inadequate HL was prevalent.

From the researcher's point of view; It's important to note that these relationships are not deterministic, and individual variations exist within each sociodemographic group. Additionally, addressing health literacy disparities requires considering other factors such as cultural beliefs, communication styles, and healthcare system accessibility to ensure effective health communication and equitable health outcomes.

The present study results; illustrate there were statistically significant positive relations between quality of life and age, sex, marital status, educational level, occupation, and Are you navigate to get information about your disease?

This results in the same line as Raggi et al (2016); Puciato et al. (2022); Homayuni et al. (2022); and Torres et al. (2023) who found that; there were statistically significant positive relationships between quality of life and various sociodemographic factors such as sex, education level, marital status, occupation, and financial status. However, Dhungana et al. (2021) found; no significant associations

between quality of life and religion, economic status, race or ethnicity, and housing condition.

From the researcher's point of view; it's important to note that while education and income play significant roles, they are not the sole determinants of quality of life, other factors such as health, relationships, personal values, and access to social support also contribute to overall well-being. Additionally, the relationship between education, income, and quality of life can vary depending on individual circumstances, cultural factors, and societal contexts.

So, it can be concluded that patients living with HIV face many significant and recurrent stressors including physical pain, side effects of ART, social stigma, and discrimination which have a negative effect on their quality of life. Hence, the healthcare team must provide patients with adequate support, care, and knowledge to promote their quality of life.

Conclusion

Health literacy (HL) plays a crucial role in empowering HIV patients to navigate the healthcare system, communicate effectively with healthcare providers, and participate actively in their care. HL is closely related to the quality of life; individuals with high health literacy are more likely to have better health outcomes and better quality of life than those with low health literacy. The result of the study concluded that; It was found that more than half of HIV patients had a moderate level of health literacy and more than three-quarters of patients had a moderate level of quality of life. Also, there were statistically significant positive correlations between health literacy and quality of life as $p < (0.001)$.

Recommendation

- **Recommendations for patients:**
- ✓ Foster a supportive learning environment by encouraging patients

to share their knowledge and experiences to foster a sense of empowerment and enhance quality of life.

- **Recommendations for health care providers:**
- ✓ Provide regular education sessions to reinforce important information and promote ongoing learning for HIV patients.
- **Recommendations for hospital administrator:**
- ✓ Create an extensive health literacy strategy that delineates goals, objectives, and action plans within the hospital.
- ✓ Conduct workshops on health literacy and effective communication techniques.
- **Recommendations for further studies:**
- Assess the role of health system factors in shaping the relationship between health literacy and quality of life among HIV patients.

Table (1): Distribution of the studied patients according to their Socio-demographic data. (n = 245).

Socio-demographic data	No.	%
Age in years		
18- > 25 years	43	17.6
25- > 35 years	111	45.3
35- > 45 years	66	26.9
45 years and more.	25	10.2
Sex		
Male	203	82.9
Female	42	17.1
Marital status		
Single	113	46.1
Married	103	42.0
Divorced	7	2.9
Widow	22	9.0
Educational level		
Illiterate	2	0.8
Primary school	62	25.3
Preparatory	41	16.7
Diplom	54	22.0
Bachelor's	86	35.1
Religion		
Muslim	244	99.6
Christian	1	0.4
Occupation		
Yes	170	69.4
No	75	30.6
If Yes (n= 170)		
Clerical work	74	43.5
Manual work	96	56.5
Economic status		
Somewhat enough	89	36.3
Not enough	51	20.8
Enough	105	42.9
Race or ethnicity		
Egyptian	243	99.2
Other	2	0.8
Housing condition		
Good	62	25.3
Average	180	73.5
Bad	3	1.2
Are you navigate to get information about your disease?		
Yes	220	89.8
No	25	10.2
Which are your sources of information? (n = 220)		
Books, magazines and publications	1	0.5
Internet	219	99.5

Table (2): Distribution of the studied patients according to clinical data (n=245).

Clinical data	No.	%
Duration of suffering the disease:		
6 months -> 1 year	4	1.6
1 year -> 5 years	174	71.0
5 years -> 10 years	64	26.1
10 years and more.	3	1.2
Min - Max	0.67 - 11.0	
Mean ± SD.	3.74 ± 2.10	
Median	3.0	
Mode of transmission of HIV:		
Drug addiction	44	18.0
Others (sexually)	201	82.0
Have associated disease or physical problems		
Yes	11	4.5
No	234	95.5
There is a family history of HIV		
Yes	74	30.2
No	171	69.8
If yes mention the person		
The wife	33	44.6
The husband	40	54.1
Other	1	1.4

Table (3): Distribution of the studied patients according to overall percent score Health literacy levels.

Health literacy levels	No.	%
Low (Less than 33.3%)	0	0.0
Moderate (\geq 33.3-66.7%)	130	53.1
High (> 66.7%).	115	46.9
Total score (65 – 325)		
Min. – Max.	186.0 – 297.0	
Mean \pm SD.	237.14 \pm 33.85	
Median	219.0	
% score		
Min. – Max.	46.54 – 89.23	
Mean \pm SD.	66.21 \pm 13.02	
Median	59.23	

Table (5) Correlation between Quality of Life and Health Literacy scale.

	HIV Patient's Quality Of Life Assessment Scale (HPQLAS)	
	r	p
HIV patients' Health literacy scale (HPHLS)	0.261*	<0.001*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Table (4): Distribution of the studied patients according to overall percent score of HIV patients' Quality of Life Assessment scale (HPQLAS) levels.

Overall percent score Quality of life	No.	%
Low (Less than 33.3%)	0	0.0
Moderate (\geq 33.3-66.7%)	196	80.0
High (> 66.7%).	49	20.0
Total score (47 – 235)		
Min. – Max.	128.0 – 194.0	
Mean \pm SD.	168.11 \pm 6.90	
Median	169.0	
overall% score		
Min. – Max.	43.09 – 78.19	
Mean \pm SD.	64.42 \pm 3.67	
Median	64.89	

Table (6): Relation between levels of overall percent score of health literacy scale and socio-demographic data (n=245).

Socio-demographic data	Level of overall HPHLS						χ^2	P
	Low (n = 0)		Moderate (n = 130)		High (n = 115)			
	No.	%	No.	%	No.	%		
Age (years)								
18->25	0	0.0	3	7.0	40	93.0		
25->35	0	0.0	51	45.9	60	54.1	72.815*	<0.0
35->45	0	0.0	55	83.3	11	16.7		
45 year or more	0	0.0	21	84.0	4	16.0		
Sex								
Male	0	0.0	94	46.3	109	53.7	21.700*	<0.0
Female	0	0.0	36	85.7	6	14.3		
Marital status								
Single	0	0.0	13	11.5	100	88.5		
Married	0	0.0	91	88.3	12	11.7	163.959*	<0.0
Divorced	0	0.0	5	71.4	2	28.6		
Widow	0	0.0	21	95.5	1	4.5		
Educational level								
Illiterate	0	0.0	2	100.0	0	.0		
Primary school	0	0.0	61	98.4	1	1.6		
Preparatory	0	0.0	34	82.9	7	17.1	161.430*	<0.0
Diplom	0	0.0	32	59.3	22	40.7		
Bachelor's	0	0.0	1	1.2	85	98.8		
Religion								
Muslim	0	0.0	130	53.3	114	46.7	1.135	FFp 0.4
Christian	0	0.0	0	.0	1	100.0		
Occupation								
Yes	0	0.0	63	37.1	107	62.9	57.097*	<0.0
No	0	0.0	67	89.3	8	10.7		
If Yes	(n = 0)		(n = 63)		(n = 107)			
Clerical work	0	0.0	5	6.8	69	93.2	51.585*	<0.0
Manual work	0	0.0	58	60.4	38	39.6		
Economic status								
Somewhat enough	0	0.0	15	16.9	74	83.1		
Not enough	0	0.0	22	43.1	29	56.9	102.023*	<0.0
Enough	0	0.0	93	88.6	12	11.4		
Race or ethnicity								
Egyptian	0	0.0	128	52.7	115	43.7	1.784	FFp 0.50
Other	0	0.0	2	100.0	0	0.0		
Housing condition								
Good	0	0.0	1	1.6	61	98.4		
Average	0	0.0	127	70.6	53	29.4	103.780*	<0.0
Bad	0	0.0	2	66.7	1	33.3		
Are you navigate to get information about your disease?								
Yes	0	0.0	106	48.2	114	51.8	20.610*	<0.0
No	0	0.0	24	96.0	1	4.0		
Which are your sources of information?	(n = 0)		(n = 106)		(n = 114)			
Books, magazines and publications	0	0.0	0	0.0	1	100.0		
Internet	0	0.0	106	48.4	113	51.6	0.934	FFp 1.0

Table (7): Relation between levels of overall percent score of quality of life scale and socio-demographic data (n=245).

Socio demographic data	Level of overall H PQLAS						χ^2	P
	Low (n = 0)		Moderate (n = 196)		High (n = 49)			
	No.	%	No.	%	No.	%		
Age (years)								
18- >25	0	0.0	27	62.8	16	37.2		
25- >35	0	0.0	83	74.8	28	25.2	21.869*	<0.0
35- >45	0	0.0	62	93.9	4	6.1		
455 year or more	0	0.0	24	96.0	1	4.0		
Sex								
Male	0	0.0	156	76.8	47	23.2	7.356*	0.00
Female	0	0.0	40	95.2	2	4.8		
Marital status								
Single	0	0.0	90	79.6	23	20.4		
Married	0	0.0	78	75.7	25	24.3	8.066*	MCp 0.03
Divorced	0	0.0	6	85.7	1	14.3		
Widow	0	0.0	22	100.0	0	0.0		
Educational level								
Illiterate	0	0.0	2	100.0	0	0.0		
Primary school	0	0.0	42	67.7	20	32.3		
Preparatory	0	0.0	39	95.1	2	4.9	15.898*	0.00
Diplom	0	0.0	48	88.9	6	11.1		
Bachelor's	0	0.0	65	75.6	21	24.4		
Religion								
Muslim	0	0.0	195	79.9	49	20.1	0.251	FFp 1.0
Christian	0	0.0	1	100.0	0	0.0		
Occupation								
Yes	0	0.0	125	73.5	45	26.5	14.532	<0.0
No	0	0.0	71	94.7	4	5.3		
If Yes	(n = 0)		(n = 125)		(n = 45)			
Clerical work	0	0.0	68	91.9	6	8.1	22.701*	<0.0
Manual work	0	0.0	57	59.4	39	40.6		
Economic status								
Somewhat enough	0	0.0	72	80.9	17	19.1		
Not enough	0	0.0	44	86.3	7	13.7	2.252	0.3
Enough	0	0.0	80	76.2	25	23.8		
Race or ethnicity								
Egyptian	0	0.0	194	79.8	49	20.2	0.504	FFp 1.0
Other	0	0.0	2	100.0	0	0.0		
Housing condition								
Good	0	0.0	54	87.1	8	12.9		
Average	0	0.0	140	77.8	40	22.2	3.265	MCp 0.1
Bad	0	0.0	2	66.7	1	33.3		
Are you navigate to get information about your disease?								
Yes	0	0.0	172	78.2	48	21.8	4.455*	0.03
No	0	0.0	24	96.0	1	4.0		
Which are your sources of information?	(n = 0)		(n = 172)		(n = 48)			
Books, magazines and publications	0	0.0	1	100.0	0	0.0		
Internet	0	0.0	171	78.1	48	21.9	0.280	FFp 1.0

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