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Comprehensive survey of the impact of HIV infection on quality of life and socio-economic status of Moroccan patients in Fez-Meknes region

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ABSTRACT

Background: Infectious diseases constitute a global burden that still affects people. Moroccan people living with HIV face several issues regarding social, economic, and mental status. **Methods:** The present study was designed to interview a total of 112 participants living with HIV by distributing a questionnaire to collect different information about personal information, psychological problems, socio-economic issues, and the impact of HIV on their normal lifestyle. **Results:** The analysis of the results revealed that women represent the highest proportion of people living with HIV (72.32%). 41.97% of people with HIV were married. A significant correlation was obtained between psychological problems and age, living area, and school level (p<0.05). Furthermore, the youngest people are more exposed to different psychological issues such as insomnia, anxiety and malaise. Importantly, the majority of participants declared that HIV infection does not completely affect the study's pursuit and/or detachment from work. **Conclusion:** These findings underline the need for crucial social interventions to prevent discrimination in order to ameliorate the social environment and quality of life of people living with HIV in Morocco.

Introduction

Infectious diseases constitute a significant burden on both patients and healthcare systems. Human immunodeficiency virus (HIV) infection is one of the most serious infectious diseases worldwide [1]. Recent statistics have shown that in 2021, approximately 38.4 million people are living with the virus, and the frequency of the pathology varies from region to region worldwide. The high severity and frequency of HIV has been recorded in Asia and sub-Saharan Africa with 650 thousand HIV-associated deaths [1–3]. In Morocco, the prevalence rate of HIV infection is still lower than that in other countries and is estimated at 0.1%

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according to the statistics of UNAIDS [4]. Substantial progress in developing HIV research capacity has been made in Morocco to manage the volume of HIV epidemiology data [2]. Mounting evidence has found that 70% of new HIV cases occur among key populations, including sex workers and people addicted to inject drugs [5]. According to the World Health Organization, the quality of life of people living with HIV is highly dependent on several factors, such as the perception of their life position among families and societies, stigma, and discrimination, which are highly affected by the culture and value systems of their regions [3,6]. Prioritizing behavior change and preventative interventions appear to be the cornerstone of managing HIV infection.

People living with HIV are exposed to various obstacles, including issues of vocational functioning and employment [7]. A previous study revealed that unemployed patients generally expressed more despair, anxiety, low self-esteem, and social isolation than employed patients [8]. Self-esteem is a complicated emotional component that develops over time and is influenced by several situations. It is positively correlated with the subjective well-being of HIV-infected patients. Multiple studies have found that employment is highly correlated with the improvement of the quality of life of patients compared with those without full-time employment and who are more likely to experience psychiatric manifestations and syndromal depression [8-10]. Other factors that amplified challenges due to literacy scores, low income, and profound stigmatization of patients with HIV could impede their ability to achieve and maintain sufficient adherence levels [11].

Within this framework, the present study was designed to determine the impact of HIV infection on patients' quality of life, the socio-economic status of patients living with HIV, and their social integration.

Material and methods

Participants and setting

This study was conducted in collaboration with the Association de Lutte Contre le Sida (ALCS) of the Fez-Meknes region. ALCS is a non-governmental organization that provides regular and permanent care and monitoring of HIV patients in the Fez-Meknes region. The target population of the study is people living with HIV and cared for by the ALCS of the region mentioned above for the year 2023, of which there are 1035 individuals. We used the accidental non-probability sampling method to select the sample study by selecting 112 patients according to the following criteria:

- Inclusion criteria: All patients with HIV aged over 18 years from the Fez Meknes region supported by the ALCS.
- Exclusion criteria: All patients living with HIV aged under 18 years.

Data collection

Data were collected by a survey with the help of ALCS social mediators using a structured questionnaire to collect information from all participants focusing our interest on socio-demographics, gender, education profile, age tranche, psychological problems, and socio-economic challenges.

Data analysis

The survey data were treated using Excel in codes and then statistically analyzed using PAST5 software.

Results and discussion

Socio-demographic information of participants

Figure 1 displays the socio-demographic profile of the different participants living with HIV. The treatment of the results showed that women represented the highest proportion of people living with HIV infection with a proportion of 72.32%, while the proportion of men did not exceed 27.68% of all respondents. A previous study reported that the prevalence of HIV infection in the general population was low compared to key populations with a proportion of 0.4-0.6% for women and 0.8% for men [12]. Along the same line, a previous study found a high HIV transmission rate per act is induced by receptive anal intercourse as well as multiple with multiple partners [13]. It has been found that for many women, their partner's sexual conduct is the most significant risk factor for HIV infection, which could explain the highest proportion registered for women. Furthermore, they have no ability to negotiate condom usage [14]. A general population survey conducted in 2007 found that the prevalence of HIV infection was higher in females (4%) than in males (3.2%) [15]. Several studies have found that biological factors have increased the susceptibility of women to HIV infection, making them more vulnerable [13,16,17].

The distribution of individuals living with HIV according to the age tranche showed that

people aged between 18 and 30, 30 and 40, and 40 and 50 represented almost similar proportions (32.14%, 34.82% and 32.22%, respectively). Concerning the study level of participants, the highest proportion of participants attended the secondary level (34.82%), while the lowest percentage of participants attended the primary level (20.54%). Instruction level predicts defensive ways of behaving, including condom use, use of guiding and testing, information about HIV, infidelity, and weakest abstinence [18]. Marital status analysis of people living with HIV showed that 41.97% of all participants were married, whereas the lowest proportion of registered participants were widowed. A study conducted on marital status and HIV prevalence found that formerly married women were 1.8 times more predisposed to HIV infection than currently married ones [19]. The key cultural characteristics related to the frequency of HIV infection among youths include polygamy, early marriage, and low protection use. Multiple sexual partners are behavioral characteristics associated with HIV infection in young people [20].

Psychological problems according to age, living area, income level and HIV stage

The quality of life of each patient constitutes a keystone with multidimensional measurements such as emotional function, medication effectiveness, and physical function of patients [21]. In the same vision, to assess the distribution of psychological problems according to age, living area, income level, and HIV stage, a statistical correlation was made. The treatment of the obtained results revealed a significant correlation between different psychological problems accompanied by HIV infection and the following demographic attributes: age, school level, and living area, as shown in **table (1)** ($p<0.05$). Surprisingly, there was no significant correlation registered between psychological problems and income level and the HIV stage of patients ($p>0.9999$). A study by **Visser et al.** found that children HIV-infected had greater physical and emotional issues and lower self-esteem than children HIV-negative [22]. Furthermore, the highest rates of mental health disorders could be associated with severe socioeconomic status. The youngest people HIV-infected were unaware of their HIV status [22]. Living areas could be a crucial factor in the psychological problems of HIV-infected people because of their socioeconomic status, medication use, long distances to healthcare systems, and other stressors or confidentiality issues. In the same line, the study conducted by **Uphold et al.** discovered that the comparison of rural and urban men HIV-infected had comparable total stress levels, HIV-associated stress, and social support, but greater rates of depression risk were observed in rural males [23]. Recently, the emergence of , new infectious diseases such as COVID-19 has had much more severe repercussions on the socioeconomic status and quality of life of people living with HIV by interrupting HIV prevention and testing as well as medical and health care systems [24]. Furthermore, COVID-19 may intensify existing barriers that restrict access to HIV treatment and care, thus affecting slow-moving efforts to meet global HIV objectives [25,26]. People living with HIV face significant levels of adversity and place a high priority on their education level and future goals to fight different HIV-associated issues, while several policies and activities should prioritize realizing these ambitions as vehicles for growth, regardless of the HIV status [27].

Table 2 summarizes the different results of the impact of HIV infection on different socio-economic parameters. The treatment of the obtained results showed that most of the interviewed people living with HIV did not achieve their school after contamination with a proportion of 92.86%. Surprisingly, most participants declared that they benefited from free HIV/AIDS retroviral medications, which reassured infection control and ameliorated the quality of life of people living with HIV and stabilized their socio-economic status. However, there are several concerns with antiretroviral therapy (ART), such as daily stress accompanied by a dosing routine and swallowing pills [28].

Employment constitutes a keystone of social integration of people living with HIV and is crucial for understanding health habits and outcomes and virus transmission among HIV-positive individuals. A study conducted by **Nakagawa et al.** found that the free access to medication, timely diagnosis, and healthcare systems of HIV-infected people had a nearly identical life expectancy as the normal population [29]. Importantly, the results obtained from this present study showed that most participants (53.58%) did not lose their jobs. HIV-related employment and job loss can significantly impact the social well-being and health of those living with

the virus throughout their lives [30]. Studies indicate a beneficial correlation between the work position and economic stability of people living with HIV [30,31].

Variance analysis

To further discriminate the different parameters determined in the present work, principal component analysis (PCA) was performed as an excellent method to explore the linkage among variables and commonalities between different parameters [32]. The two principal components extracted in the PCA model of all the parameters studied explained a cumulative variance of 91.025%. The first component PC1 explained 72.788% and represented in its positive section fear, anxiety, insomnia, malaise, low income, secondary, and stage 1, whereas the negative part of the first component contained other parameters **(Figure 2)**.

The second component explained 18.237% and represented mainly school level (university, analphabet, and secondary), urban area, and low income. The negative part of the second component represented other parameters. It can be clearly seen that there is a positive correlation between low-income and rural participants and their psychological problems, especially malaise, panic, anxiety, and insomnia. Robust evidence has found that both wealth and income level can lead to potentially risky or protective behaviors [33]. Furthermore, wealth status and education play a paramount role in having HIV knowledge [34]. A comprehensive review conducted by Bhana et al. reported that family-based interventions and economic strengthening could be of crucial importance in improving the mental health of adolescents living with HIV [35]. Several effective treatments, including cognitive processing therapy, increased community networking and engagement, and encouraging social bonding with neighbors, could improve the mental health of people living with HIV [36].

Table 1. Question: Do you suffer from psychological problems?

Answered by	Fear	Panic	Malaise	Insomnia	Anxiety	Total	*p* value
Age: 18-30 30-40 40-50 50-60 >60	 0.95% 3.80% 4.76% 0.95% 0.95%	 0.95% 5.71% 0.95% 0% 0.95%	 6.66% 6.66% 4.76% 4.76% 0.95%	 8.57% 4.76% 4.76% 2.85% 0.95%	 12.38% 9.52% 6.66% 0.95% 0%	100%	<0.0001
Living area: Rural Urban	 1.02% 10.20%	 8.16% 1.02%	 22.44% 5.10%	 13.26% 3.06%	 29.59% 6.12%	100%	<0.0001
School level: Analphabet Primary Secondary University	 4.16% 1.04% 4.16% 3.12%	 1.04% 3.12% 3.12% 1.04%	 4.16% 4.16% 10.41% 9.37%	 3.12% 5.20% 6.25% 2.08%	 8.33% 5.20% 12.5% 8.33%	100%	<0.0001
Income level: Low income Middle income Higher income	 7.84% 1.96% 1.96%	 6.86% 0.98% 0%	 22.54% 2.94% 0.98%	 18.62% 1.96% 0%	 31.37% 1.96% 0%	100%	>0.9999
HIV stage: Stage A Stage B Stage C	 9.17% 0.91% 0.91%	 4.58% 2.75% 0.91%	 19.26% 3.66% 3.66%	 8.25% 4.58% 9.17%	 11.92% 11% 9.17%	100%	>0.9999

Table 2. Impact of HIV infection on different socio-economic parameters.

	Yes	No
Children dropping out of school after contamination	7.14%	92.86%
Do you benefit from free HIV/AIDS retroviral medications?	94.65%	5.35%
Have you lost your job due to this disease (HIV/AIDS)?	53.58%	46.42%
Do you need work to cover the costs and expenses resulting from this disease?	77.68%	22.32%
Has illness caused you to stop your educational path (academic or vocational training)?	45.53%	54.47%

Figure 1. General information of different respondents.

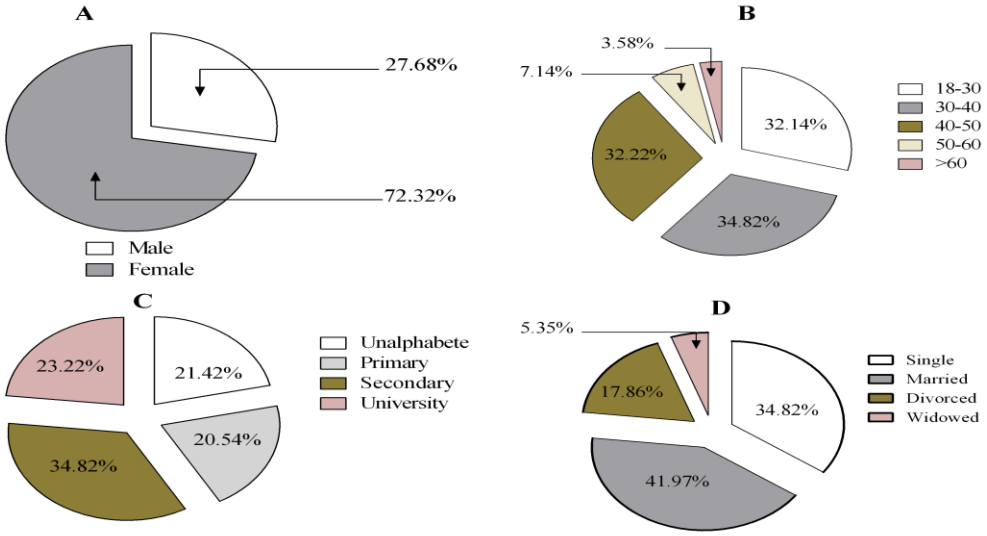
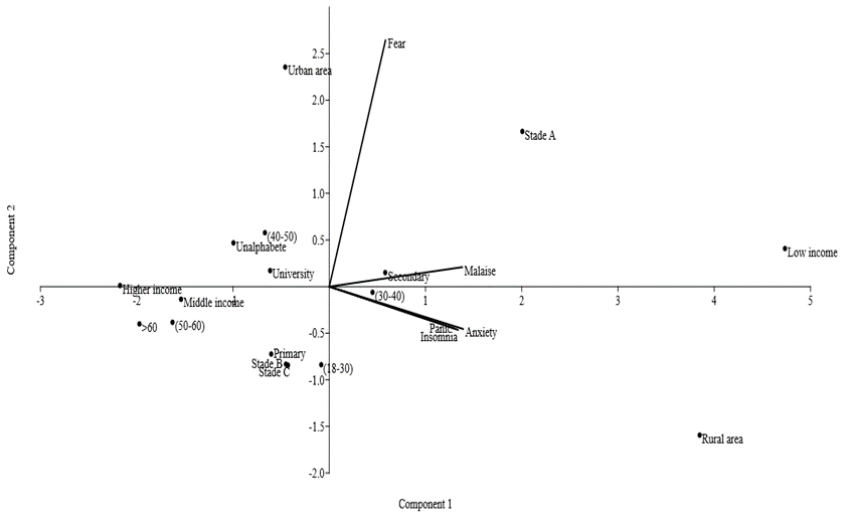


Figure 2. Projection of different variables on the factorial plane formed by the first two principal components.



Conclusion

The present study intends to address the socio-economic status and psychological problems of Moroccans living with HIV. The socio-economic status of participants was highly associated with multiple factors, including school level, income level psychological issues and representations and knowledge about HIV infection. Acceptability of the general population and employment constitute a

social determinant of the quality of life of people living with HIV.

Conflict of interest

The authors declare that they have no conflicts of interest.

Data availability

The data used to support the findings of this study are included within the article.

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