

Quality of Life Among Patients with Hemoglobinopathies: The Role of Self-Efficacy in the Use of Medication and Satisfaction with the Provided Health Care

Theofilou P¹* and Nikolakopoulos S

School of Social Sciences, Hellenic Open University, Patra, Greece

*Corresponding author: Paraskevi Theofilou, School of Social Sciences, Hellenic Open University, Patra, Greece

Received: 30 July 2025

Accepted: 25 August 2025

Published: 16 September 2025

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Abstract

Background: Hemoglobinopathies are chronic diseases that significantly burden patients both in their daily lives and in the long term. The purpose of the research is to contribute to the understanding of patients' experiences, needs and perceptions regarding the medical services provided. The research aims to highlight the positive and negative dimensions of healthcare, as well as to enhance self-efficacy in medication use and empower patients to use medications appropriately.

Methods: The research is based on a sample of 130 patients with diagnosed hemoglobinopathy, coming from three different hospitals in Greece. Data were collected through a structured questionnaire, which includes four main sections: satisfaction with healthcare (PSQ-18), self-efficacy in medication use (SEAMS), quality of life (QOL10), and demographic/clinical data of the participants.

Results: The research findings indicate that quality of Life (overall) presents a negative correlation ($r = -0.358$, $p < 0.001$), indicating that higher levels of self-efficacy in medication use may be associated with lower perceived quality of life. Also, general Quality of Life is negatively correlated ($r = -0.372$, $p < 0.001$), possibly indicating that self-efficacy in medication use affects the overall sense of well-being and health. Overall, self-efficacy does not appear to be significantly related to any of the Satisfaction subscales. Self-Efficacy in Medication Use and Overall Satisfaction with Overall Satisfaction, Self-Efficacy in Medication Use shows a non-significant correlation ($r = -0.019$, $p = 0.827$).

Conclusion: The findings show a strong association of quality of life with self-efficacy in the use of medication.

Keywords: quality of life, self-efficacy, use of medication, patients with hemoglobinopathies, satisfaction, health care

1. Introduction

Hemoglobinopathies are the most common hereditary diseases, with an estimated 300,000 affected babies born worldwide each year, with the most prevalent diseases being thalassemia and sickle cell anemia. Hemoglobinopathies are thought to have arisen as a result of genetic mutations enhanced by environmental factors, such as natural selection. In countries where malaria is endemic, patients with hemoglobinopathies showed greater resistance to the disease and had a better chance of survival. The association of malaria with hemoglobinopathies was first made in Sardinia and Melanesia, and later in Tanzania and the Pacific. Another factor that may be responsible for the spread of hemoglobinopathies is consanguineous marriages, which occur in certain countries. Hemoglobinopathies are transmitted in an autosomal recessive manner, therefore, it is quite

possible to transmit two defective genes, one from each parent, when both belong to the close family environment. Finally, the development of medical science and international health standards have improved the chance of survival of children born with serious hemoglobinopathies, while life expectancy has also increased, which means that more people are living with these conditions. Although several public health initiatives have been taken to prevent and manage hemoglobinopathies, such as screening and population education, the prevalence is believed to be increasing [1].

The World Health Organization has highlighted the increasing trend of hemoglobinopathies and has highlighted the public health problem, as it states that approximately 5% of the adult population is a carrier of a certain hemoglobin disorder. Of these, approximately 3% are carriers of thalassemia major, while 2% are carriers of sickle cell anemia. In contrast,

of the approximately 300,000 newborns born each year, approximately 70% suffer from sickle cell anemia, while the rest from some severe form of thalassemia. Most cases of hemoglobinopathies are found in sub-Saharan Africa, the Middle East, southern China, the Mediterranean region and Southeast Asia. In recent years, due to increased migration of the population of these countries to Europe, Australia and America, the prevalence of hemoglobinopathies has increased in areas where the diseases were considered rare. The main reasons for the global increase in the prevalence of sickle cell anemia are the increase in population, especially in parts of Africa, as well as the increased chances of survival at an early age. Thalassemia presents heterogeneity in terms of its global distribution, while an increase in prevalence is observed mainly in the elderly. In Europe, 1 person per 10,000 suffers from Mediterranean anemia every year, while 1-5 per 10,000 suffer from sickle cell anemia, while the number of sufferers is expected to increase in the coming years. In Greece, the prevalence of blood-transfused thalassemias is quite high, as it concerns approximately 20 cases per 100,000 people during the period 2010 to 2015. During this period, approximately 4,000 people suffered from hemoglobinopathies in Greece, of which 2,100 suffered from thalassemia major and approximately 1,000 people from sickle cell anemia [1, 2].

Hemoglobinopathies are chronic diseases that significantly burden patients both in their daily lives and in the long term. Complications of the disease, such as frequent infections, organ damage, frequent hospitalizations, delayed growth, reduced productivity and chronic pain caused especially in sickle cell anemia due to obstructive episodes, can negatively affect the quality of life. Also, complications and difficulties arising from the treatment of hemoglobinopathies can negatively affect the quality of life. Lifelong treatments, regular transfusions, continuous monitoring of iron levels, frequent visits to doctors, frequent laboratory tests and the limitation of time of patients with hemoglobinopathies are factors that contribute to the appearance of symptoms of anxiety, discomfort and depression. Hemoglobinopathies are heterogeneous in terms of the extent to which they affect patients' quality of life, and several factors have been observed that can enhance or impair it. Factors that have been observed to affect quality of life include adherence to treatment, the quality of health services received, as well as various clinical and demographic factors [3, 4].

Self-efficacy, satisfaction and Quality of Life (QOL) are considered very important psychological concepts that can affect a person's physical and psychological well-being and problem-solving skills. Several studies have addressed the negative side of low self-efficacy [5]. It is believed that a person who has low self-efficacy may suffer from depression, illness and poor problem-solving skills [5]. This can also affect their learning process, passion, level of satisfaction and

motivation [5]. In addition, the level of self-efficacy influences the level of achievement and the ability to control events [5]. Individuals who have a strong sense of self-efficacy are more likely to have a higher sense of commitment than those who have a low sense of self-efficacy [5].

In Greece, few studies have been conducted to investigate the quality of life in patients with hemoglobinopathies. In a study conducted in Crete in 2018 [6] involving 119 patients suffering from thalassemia, the quality-of-life levels in these patients were quite high, almost identical to the levels of life of the healthy population. However, another study conducted in 2017 [2] involving 283 patients with thalassemias showed that their quality-of-life levels are significantly lower than those of the general population. This study also showed that clinical and demographic data can significantly influence the quality of life of patients with thalassemias. Female patients had better scores in some subgroups of quality of life, while it was also observed that patients' access to work increases quality of life scores. Conversely, a decrease in quality of life was observed in patients with comorbidities, while quality of life also decreased as the patients' age increased. Finally, in a study involving only 40 patients with sickle cell anemia [7], patients reported that the disease limited their daily lives, such as their social life, employment and other activities. Patients also expressed discomfort with the burden due to frequent medical examinations, the use of medications and the costs of frequent travel. They also reported that the guidelines regarding treatment and pain management were adequate, however they would like the staff to be more trained and more involved in decision-making regarding the management of their disease [2, 6, 7].

This study focuses on the assessment of quality of life, self-efficacy in medication use and satisfaction with healthcare in patients with hemoglobinopathies. The purpose of the research is to contribute to the understanding of patients' experiences, needs and perceptions regarding the medical services provided. The research aims to highlight the positive and negative dimensions of healthcare, as well as to enhance self-efficacy in medication use and empower patients to use medications appropriately. The objectives of the research are summarized as follows:

- To assess the level of satisfaction of patients with the healthcare services they receive, as measured by the PSQ-18 questionnaire.
- To measure self-efficacy in medication use with the help of the SEAMS, emphasizing patients' certainty regarding their ability to follow the recommended medication regimen.
- To assess the overall quality of life of patients with hemoglobinopathies using the QOL10 tool.
- To investigate the possible relationship between the above variables.

The main hypothesis examined is as follows: There is a statistically significant correlation between quality of life, self-efficacy in medication use and satisfaction with healthcare.

2. Methods

The research is based on a sample of 130 patients with diagnosed hemoglobinopathy, coming from three different hospitals in Greece. The sample was determined through non-probability sampling and specifically the convenience sampling method, due to the geographical dispersion of the patients and the time constraints that affect the possibility of collecting data on a larger scale. Patients were informed about the nature of the research, its objectives and the voluntary basis of their participation, ensuring their consent in accordance with ethical standards and personal data protection principles. Data collection was carried out through direct contact with each patient, in order to ensure the correct understanding and interpretation of the questions, minimizing the margin for interpretative deviations.

Entry criteria in this study, participants had to meet the following criteria: • Be male or female over 18 years of age • Be diagnosed with any type of hemoglobinopathy • Be undergoing regular blood transfusions • Be able to speak Greek and be able to understand and sign the consent form for their participation in the study

Exclusion criteria • Patients suffering from cognitive impairment • Patients diagnosed with hemoglobinopathy but not undergoing regular blood transfusions

Data were collected through a structured questionnaire, which includes four main sections: satisfaction with healthcare (PSQ-18), self-efficacy in medication use (SEAMS), quality of life (QOL10), and demographic/clinical data of the participants.

The PSQ-18 (Patient Satisfaction Questionnaire) is a well-documented tool for measuring patient satisfaction with healthcare services. It was validated in Greece by Theofilou et al. [8], with the aim of recording patients' experiences with various aspects of healthcare indicating very good Cronbach α (from 0.877 to 0.879). This tool is based on a five-point Likert scale and includes seven subscales covering different dimensions of patient satisfaction, such as General Satisfaction, Technical Quality, and Interpersonal Behavior [7]. It contains 18 questions and is rated on a five-point Likert scale, where 1 = "Strongly Agree" and 5 = "Strongly Disagree". Responses are organized into seven subscales, which provide ratings on specific aspects of healthcare: □ Overall Satisfaction (Questions 3 and 17) □ Technical Quality (Questions 2, 4, 6, and 14) □ Interpersonal Behavior (Questions 10 and 11) □ Communication (Questions 1 and 13) □ Financial Aspects (Questions 5 and 7) □ Time with Physician (Questions 12 and 15)

□ Accessibility and Convenience (Questions 8, 9, 16, and 18) Each subscale is scored by averaging its component questions, and all questions were modified so that higher scores correspond to increased levels of satisfaction. In addition, Cronbach's alpha coefficient was calculated for each subscale and the total index to determine the internal consistency and reliability of the instrument's measurements. The use of the PSQ-18 in clinical research is widespread, as it is considered a reliable and valid tool for assessing patient satisfaction with health care. Cronbach's alpha coefficient is commonly used to test the reliability of the instrument, confirming the internal consistency of the subscales [8]. Adjustments to the PSQ-18 questions, so that higher scores correspond to greater satisfaction, improve the readability and understanding of the results for participants [8].

The SEAMS (Self-Efficacy for Appropriate Medication Use Scale) is a tool designed to assess patients' self-efficacy in medication use, especially in cases of chronic diseases. The questionnaire was developed by Risser et al. [9], with the aim of understanding patients' self-confidence in managing their medication, which is directly linked to adherence to treatment and therapeutic outcomes. The SEAMS (Self-Efficacy for Appropriate Medication Use Scale) has proven to be highly reliable and valid in measuring self-efficacy in medication use, as confirmed by its psychometric properties. According to Theofilou et al. [10, 11], the Greek version of the SEAMS was recently developed, following international adaptation procedures, such as translation, back-translation, and semantic evaluation. This process involved the participation of 10 patients with end-stage renal disease (ESKD) undergoing hemodialysis, who found the tool easy to understand and appropriate. The psychometric properties of the tool include high internal consistency, with a Cronbach's alpha reaching 0.89, while repeat-measures reliability ranges from 0.7 to 0.9 [11]. The validity of the tool was assessed through factor analysis, confirming the structure of the questionnaire. High scores on the SEAMS indicate high levels of self-efficacy in medication use, which is associated with better medication adherence and improved clinical status. The present study highlights the importance of multidisciplinary collaboration for the successful cultural adaptation of tools such as the SEAMS, and constitutes the basis for further research that will include a larger sample to evaluate the psychometric properties of the Greek version.

The QOL10 is a quality-of-life measurement tool that covers key areas of human existence, such as physical and mental health, social relationships and overall perception of quality of life. The two-dimensional structure of the QOL10 was derived through factor analysis and allows for a thorough assessment of individuals' quality of life at a social and personal level [12]. In particular, the Social Quality of Life includes questions that focus on social and interpersonal relationships, sexual function and social

activities, while the General Quality of Life refers to individuals' perception of their health and professional status. The QOL10 has been widely used in studies to assess the quality of life of patients with chronic diseases, as well as in other populations, demonstrating its reliability and validity [12]. Quality of life measurement tools, such as the QOL10, are useful for assessing individuals' well-being and understanding the impact of health on their daily activities. The score ranges from 1 ("Very Good") to 5 ("Very Bad"). Using factor analysis, the QOL10 was subdivided into two main dimensions: □ Social Quality of Life (questions 4-8, includes questions related to friendships and personal relationships, sexual function, and social interactions). □ General Quality of Life (questions 1-3, 9, and 10, includes patients' perception of their physical and mental health, their professional life, and their overall quality of life). There are 4 dimensions of the QOL10: QOL1: Self assessed (global) quality of life [Q10]

QOL5: Measured global quality of life [(Q1+Q2+Q3+Q4+Q5)/3]

QOL10:"Health-QOL-Ability"
(QOL5+QOL1+Ability)/3 Where Ability is derived as (Q6+Q7+Q8+Q9)/4

In the present study, all the dimensions indicated very good internal consistency ranging from 0.834 to 0.930.

Demographic and Clinical Characteristics This section of questions concerns the demographic and clinical characteristics of the patients, with the aim of fully recording the factors that may affect the main variables of the study. These variables include: gender, age, marital status, number of children, educational level, employment status, health insurance, years since disease diagnosis, presence of another chronic condition, type of hemoglobinopathy, use of medications for hemoglobinopathy, and duration of treatment.

The participants' responses were collected through personal interviews and stored in an Excel file. The SPSS statistical package was used to analyze the data, following the following methodology:

- **Descriptive Statistics:** Means, standard deviations, and frequencies were calculated for the demographic and clinical characteristics of the participants, in order to capture the main trends and characteristics of the sample.
- **Reliability Check:** Cronbach's α coefficient was calculated to assess the internal consistency of the instruments. Specifically, for each subscale of the PSQ-18 and for the SEAMS and QOL10 as a whole, the Cronbach's α coefficient was used to ensure the reliability of the questionnaires, indicating whether the questions of each scale reliably measure the same dimensions.

- **Sampling Adequacy and Sphericity Test:** The Kaiser-Meyer-Olkin (KMO) Test was applied to assess the sampling adequacy of the QOL10 data, and the Bartlett's Test of Sphericity was used to check the suitability of the data for factor analysis. The KMO showed a high value, while the Bartlett's Test showed a statistically significant result, confirming the suitability of the data for factor analysis.
- **Variable Clustering:** Aggregate indices for satisfaction with healthcare and self-efficacy were created by clustering the subscales of the PSQ-18 and SEAMS, respectively. In addition, the QOL10 was divided into two main factors (Social Quality of Life and General Quality of Life) through factor analysis.
- **Factor Analysis:** Exploratory Factor Analysis (EFA) was conducted on QOL10 to identify the two factors, Social Quality of Life and General Quality of Life, that reveal the structure of quality of life. The factor analysis confirmed the structure of QOL10, and the variables were distributed across the two factors, with the Factor Matrix indicating strong loadings on the relevant questions.
- **Hypothesis Testing and Correlation:** Spearman correlation coefficient was used to investigate the relationships between satisfaction with healthcare, self-efficacy in medication use, and quality of life. In addition, the associations of these key indicators with demographic characteristics, such as age and years since diagnosis, were examined to understand whether and how demographic data affect the main research measures. Non-parametric tests were used to investigate these relationships, as the data did not exhibit normality. Specifically, the Spearman correlation coefficient was applied to study the relationships between continuous variables, such as age, years since diagnosis of the disease and the main indicators (Satisfaction with health care, Self-efficacy in the use of medications, Quality of Life). Also, the Mann-Whitney U Test was used to compare indicators between two categories of demographic characteristics (e.g., gender) and the Kruskal-Wallis Test to compare more than two groups (e.g., marital status, educational level). The results of these analyses provided information on the existence of statistically significant differences and correlations, helping to understand the factors that affect the main measurements of the study. In this way, the analysis covered both the assessment of the reliability and appropriateness of the tools,

as well as factor analysis and correlations, providing a comprehensive framework for understanding the factors that influence quality of life, satisfaction with healthcare, and self-efficacy in medication use.

3. Results

From the demographic data of the sample, we observe that the majority of participants are women (61.5%) compared to men (38.5%). The distribution in marital status shows that the largest percentage is either single (45.4%) or married (46.2%), with much smaller percentages involving divorced (4.6%), widowed (2.3%) or other situations (1.5%). Regarding the number of children, the majority (52.3%) do not have children, while a significant percentage has one (23.8%) or two children (19.2%). The educational distribution shows that almost half of the participants have secondary education (49.2%), while only a small percentage have higher qualifications, such as a master's degree (4.6%) or a doctorate (1.5%) (**Table 1**).

Employment status also varies, with 36.2% of participants classified in "Other" occupational status categories, while the percentages of public and private employees are close to 17.7% and 16.2% respectively. The majority of participants have public insurance (85.4%), while a small percentage are either uninsured (8.5%) or have private insurance (5.4%). 16.9% of participants reported suffering from another chronic disease. Regarding the type of hemoglobinopathy, the majority have Mediterranean Anemia (90.8%), and only 5.4% have Sickle Cell Anemia. Also important is that 93.1% are receiving medication, which likely indicates the need for ongoing management of their condition through medication (**Table 1**).

Furthermore, the mean age of the participants is 43.7 years with a standard deviation of 10.99, which indicates a relative age diversity in the sample, as the age range ranges from 20 to 75 years (**Table 2**). This adds variety to the sample, allowing for the coverage of different age groups, who may have different experiences and challenges regarding their health management. Regarding the years since diagnosis of the disease, the mean is 37.07 years, with a standard deviation of 13.657, which suggests that most of the participants live with the diagnosis for a long time, which may affect their quality of life and self-efficacy in using medications. Similarly, the average years of treatment is 32.5 years (S.D = 13.106), indicating that most participants receive treatment for many years, which potentially affects their experiences with medication and their overall satisfaction with the care provided (**Table 2**).

For the analysis of the PSQ-18 results, we rely on two distinct groups of questions. Group 1 (positive satisfaction questions) (questions 1, 2, 3, 5, 6, 8, 11, 15 and 18) includes items associated with positive characteristics of healthcare. In this group, a higher

mean score means increased satisfaction, with a maximum value of 5 for "Strongly Agree". In contrast, group 2 (negative satisfaction questions) (questions 4, 7, 9, 10, 12, 13, 14, 16 and 17) includes questions that require reverse scoring to interpret satisfaction, where maximum satisfaction corresponds to the value 1 ("Strongly Agree"). We create 7 variables and present their descriptive measures. These variables are: □ Overall Satisfaction (Questions 3 and 17) □ Technical Quality (Questions 2, 4, 6 and 14) □ Interpersonal Behavior (Questions 10 and 11) □ Communication (Questions 1 and 13) □ Financial Aspects (Questions 5 and 7) □ Time with the Doctor (Questions 12 and 15) □ Accessibility and Convenience (Questions 8, 9, 16 and 18) Finally, all questions are grouped to create an overall satisfaction variable (**Table 3**). The results from the division into two groups for PSQ 18 (group 1 and 2) are as follows:

From the descriptive statistical analysis it follows that the mean for the positive satisfaction questions is 2.6761 with a standard deviation of 0.75118. This indicates that the participants do not have an extremely high sense of satisfaction, as the mean is far from 5. For the negative satisfaction questions, the mean is 3.0795 with a standard deviation of 0.70453, which shows that there is a relative variation in the answers and also a deviation from the maximum possible satisfaction (i.e. the value 1) (**Table 3**). These values indicate that the patients express moderate satisfaction with the care provided, with slightly greater satisfaction in the characteristics measured with the 1st group of questions compared to the 2nd. In creating the 7 variables for the PSQ -18 we have the following results (**Table 4**):

The analysis of the seven variables related to healthcare provides a detailed picture of patients' perceptions of service quality. Overall Satisfaction has a mean of 2.7769 and a standard deviation of 0.63509, indicating a moderate sense of satisfaction. Patients seem to have a positive but not extremely high evaluation of the general care they receive. The Technical Quality of services is rated with a mean of 2.9827 and a standard deviation of 0.52384. This value indicates that participants recognize an acceptable technical quality in care, although the distance from the maximum satisfaction index indicates that there is room for improvement. The Interpersonal Behavior of healthcare professionals, with a mean of 2.5615 and a standard deviation of 0.65891, is positively evaluated by participants, indicating that patients consider the positive attitude and behavior of staff important. Although satisfaction is not absolute, it is evident that the human dimension of care is valued. Communication is scored with a mean of 2.8000 and a standard deviation of 0.59585, which suggests that participants consider communication to be adequate, but not excellent. This may reflect challenges in understanding information or in the transparency of communication between doctors and patients. Regarding Financial Aspects, the mean is 3.1269 with a standard deviation of

0.61729, which indicates a relatively low satisfaction with the cost and financial demands of health care. This high value may indicate that the financial burden is a significant factor of discomfort for patients. Satisfaction with Time with the Doctor is recorded with a mean of 2.9500 and a standard deviation of 0.63444, which indicates that patients evaluate the time available to the doctor as acceptable, but not sufficient. This may reflect limitations in the examination and discussion time that the doctor dedicates to each patient. Finally, Accessibility and Convenience records a mean of 2.8596 with a standard deviation of 0.57230, indicating that participants find the accessibility and convenience of services at satisfactory levels, but with room for improvement. Overall, these values outline the patients' experience and demonstrate the elements that contribute to their perception of the quality of healthcare (**Table 4**). Finally, a reliability check is carried out to create the satisfaction variable from the PSQ 18 and the results show a good score equal to 0.783 which comes from the conflicting test score (**Table 5**).

So, in order to have a more valid reliability check, we split the questions into those of group 1 and group 2 and the results are more satisfactory for the continuation of the analysis and the creation of the aggregate satisfaction variable as the index is 0.871 and 0.805 (**Table 6**).

The reliability analysis for the two groups of PSQ-18 questions showed high levels of internal consistency, indicating that the questions within each group are coherent with each other and reliably measure the corresponding satisfaction dimensions. Specifically, for the positive satisfaction questions, the Cronbach's α coefficient is 0.871, which indicates excellent reliability. This high value means that the questions are very coherent, and therefore their answers have high internal consistency. For the negative satisfaction questions, the Cronbach's α coefficient is 0.805, which also indicates good reliability (**Table 6**). Although the value is slightly lower than in Group 1, it remains at acceptable levels of reliability, confirming that the questions in the group adequately capture the corresponding satisfaction dimension.

The **table** presents the Cronbach's Alpha coefficients for the seven subscales of the PSQ-18, reflecting their degree of reliability. Cronbach's Alpha values range from 0.658 to 0.706, indicating satisfactory internal consistency for most subscales. The highest reliability value is found in the Communication subscale (0.706), indicating that the questions in this subscale are well related to each other and provide stable measurements. The Interpersonal Behavior and Financial Aspects subscales also have high values (0.693), indicating a good level of consistency. The remaining subscales (Overall Satisfaction, Technical Quality, Time with the Physician, Accessibility, and Convenience) present values close to the threshold of 0.65, which is considered acceptable for

questionnaires in the initial stages of development or in samples with heterogeneity (**Table 7**). Overall, the results indicate that the PSQ-18 has acceptable to good internal consistency, making it a reliable tool for measuring patient satisfaction in various areas of healthcare. At the same time, the potential for improvement of some subscales, such as Technical Quality and Accessibility and Convenience, is suggested to further enhance their reliability.

The analysis of responses to the medication self-efficacy questionnaire provides an overall picture of the factors that influence patients' ability to adhere to their medication. The mean values for most questions are around 2.5, indicating moderate confidence in the patients' ability to manage their medication, while the standard deviations are around 0.6-0.8, indicating some variation in responses. The general trend of the responses shows that factors such as the complexity of the treatment, the side effects of the medications, and the need for reminders are barriers for some patients. Participants seem to have difficulty when their treatment involves multiple doses or when their daily routine is disrupted. These difficulties are to be expected, as complex medication regimens can require special attention and consistency, which can be difficult for patients, especially if they are experiencing side effects or busy daily obligations. It is also noteworthy that self-efficacy in medication use is influenced by the degree of support patients receive, such as having a reminder to take their medication. Lack of support can lead to reduced adherence to treatment, especially in cases where patients are unsure of when and how to take their medication. Furthermore, uncertainty about the role and function of medications affects patients' confidence in treatment, while patients who express financial difficulties may have lower adherence due to cost. Overall, the responses indicate that self-efficacy in medication use is a complex factor influenced by both practical difficulties and the support and education patients receive. Understanding these factors can help develop interventions that will enhance self-efficacy in medication use, such as improving patient information and ensuring supportive measures for better management of their treatment (**Table 8**).

Subsequently, a reliability test was conducted to create the overall variable self-efficacy in medication use, which resulted in a value of 0.873. The reliability of the measurement tool for self-efficacy in medication use, as demonstrated by the Cronbach's α coefficient, is extremely high, with a value of 0.873 for all 16 questions (**Table 9**). This high value indicates that the questions in the questionnaire have high internal consistency, which enhances the reliability of the tool. In practice, this means that the participants' answers are consistent and that the questions adequately measure the same factor, namely self-efficacy in medication use. This high reliability makes the tool suitable for studying the various factors that influence patients' adherence to medication and increases confidence in the results of the analysis. In conclusion,

the high level of reliability means that the questionnaire is suitable for investigating patients' self-confidence regarding the management of their medications and can be used with confidence to draw conclusions within the context of the present research.

Based on the results, the analysis of the two main categories, Social QOL and Global QOL, reveals interesting data on the perceptions of the participants. Social QOL, which includes questions on friendly and personal relationships, sexual functioning and social interactions, generally presents higher mean values, such as in the relationship with the partner (2.73) and the ability to fall in love (2.53). These values indicate a moderate to low satisfaction, mainly in the interpersonal and social aspects, as they are far from the optimal scores. Global QOL, which covers physical and mental health, personal satisfaction and work capacity, has mean values ranging around 2 to 2.5, indicating a moderate perception of the overall quality of life. For example, mental health has a mean value of 2.22, while overall quality of life is rated at 2.19 (Table 10). These values indicate that patients have a moderately but not extremely positive perception of their overall well-being. Overall, the responses suggest that participants rate their quality of life as moderate, with small variations between social and general aspects. Descriptives regarding 4 dimensions of the QOL 10 are described in Table 11.

The results of KMO and Bartlett's Test of Sphericity are indicative of the suitability of the sample and the adequacy of the data to conduct factor analysis. The Kaiser-Meyer-Olkin (KMO) value is 0.900, which indicates very good sample adequacy. According to the literature, KMO values above 0.8 are considered very good, which means that the variables have enough correlations with each other to justify the use of factor analysis. Bartlett's Test of Sphericity has a statistically significant value (Sig. < 0.001), with $\chi^2 = 614.929$ and degrees of freedom 45 (Table 12). The statistical significance ($p < 0.001$) indicates that the correlations between the variables are not random, which further supports the application of factor analysis.

Factor analysis for the QOL10 questionnaire revealed two main factors, which were defined as Social QOL and Global QOL. The distribution of questions across the factors indicates the differentiation of dimensions of quality of life, as perceived by the participants. Factor analysis for the QOL10 questionnaire revealed two main factors, which were defined as Social QOL and Global QOL. The distribution of questions across the factors indicates the differentiation of dimensions of quality of life, as perceived by the participants. The first factor, Social QOL, includes questions mainly related to interpersonal relationships and social activity. Questions about relationships with friends, relationships with a partner, ability to fall in love, sexual functioning, and social activity have high loadings on this factor (e.g., 0.788 for sexual

functioning and 0.675 for social activity). These high values suggest that these questions well represent the social dimension of quality of life. The second factor, Global QOL, gathers questions that address the overall perception of quality of life, physical and mental health, and ability to work. Questions such as mental health (0.771), sense of self (0.756), ability to work (0.739), and overall quality of life (0.803) have high loadings on this factor, suggesting that they refer to the overall picture of the individual's life and well-being (Table 13). Overall, the factor analysis confirms the existence of two distinct but related dimensions of quality of life that patients perceive. The high loadings of the questions on each factor indicate that the QOL10 tool is effective in separating social from general aspects of quality of life.

The reliability analysis for the QOL10 questionnaire showed high internal consistency, as indicated by the Cronbach's alpha coefficient, which is 0.861 for the total of 10 questions. This value indicates that the questions of the tool are consistent with each other and reliably measure the quality of life of the participants. High reliability means that the QOL10 questionnaire can be used with confidence to assess quality of life, as the participants' responses consistently reflect the two main dimensions of quality of life defined through factor analysis (Social and General Quality of Life). The table presents the Cronbach's Alpha coefficients for the two main dimensions of the QOL-10 questionnaire: Global Quality of Life (Global QOL) and Social Quality of Life (Social QOL). For both subscales, the Cronbach's Alpha coefficient is 0.865, indicating high internal consistency.

- Global Quality of Life (Global QOL): It includes 5 questions related to physical and mental health, professional life and overall quality of life. The high reliability coefficient indicates that the questions of the subscale are well related to each other and accurately measure this dimension.
- Social Quality of Life (Social QOL): It also consists of 5 questions that focus on social and personal relationships, sexual functioning and participation in social activities. The same reliability value (0.865) indicates that this subscale is also equally reliable for measuring the social dimension of quality of life.

Overall, the reliability of the two subscales is very high, making the QOL-10 a reliable tool for assessing quality of life in these two dimensions. High Cronbach's Alpha coefficients confirm the suitability of the tool for measuring both general and social quality of life.

Based on the results of the normality tests for the three variables (Satisfaction with healthcare, Self-efficacy in medication use, and Quality of Life), the following results emerge: For the variable Satisfaction with healthcare, both tests (Kolmogorov-Smirnov and Shapiro-Wilk) have a statistically significant value (Sig. < 0.001), which indicates rejection of the

normality hypothesis. Therefore, the distribution of Satisfaction with healthcare is not normal. For the variable Self-efficacy in medication use, the Kolmogorov-Smirnov test shows a non-statistically significant value (Sig. = 0.200), while the Shapiro-Wilk test shows a statistically significant value (Sig. = 0.010). This indicates mixed results. Since we have a small sample and the Shapiro-Wilk test is more appropriate in this case, we can conclude that the distribution of Self-Efficacy in medication use is not completely normal. For Quality of Life, both tests are statistically significant (Sig. < 0.001), which indicates that the distribution of Quality-of-Life deviates from normality (**Table 14**). Regarding the normality of the dimensions of the QOL10, that is self-assessed (global) quality of life, measured global quality of life, ability and Health-QOL-Ability, there was no normality (Sig. < 0.001).

In summary, based on the normality tests, none of the three variables strictly follows a normal distribution, especially in our small sample. Therefore, to investigate the associations between these variables, it is advisable to use non-parametric correlation methods, such as the Spearman coefficient, which does not require the assumption of normality.

Self-Efficacy presents the following correlations with the Satisfaction subscales (**Table 15**):

- General Satisfaction: No statistically significant correlation is observed ($r = -0.024$, $p = 0.782$).
- Technical Quality: No statistically significant correlation is observed ($r = -0.030$, $p = 0.733$).
- Interpersonal Behavior: Also, no statistically significant correlation is observed ($r = 0.041$, $p = 0.643$).
- Communication: No statistically significant correlation is observed ($r = -0.047$, $p = 0.592$).
- Financial Aspects: No statistically significant correlation is observed ($r = 0.029$, $p = 0.747$).
- Time with the Doctor: Here too, no significant correlation is observed ($r = 0.041$, $p = 0.641$).
- Accessibility and Convenience: There is no significant correlation ($r = 0.039$, $p = 0.662$).

Overall, Self-Efficacy does not appear to be significantly related to any of the Satisfaction

subscales. Self-Efficacy in Medication Use and Overall Satisfaction with Overall Satisfaction, Self-Efficacy in Medication Use shows a non-significant correlation ($r = -0.019$, $p = 0.827$). This indicates that patients' levels of self-efficacy in medication use are not directly related to how they perceive their satisfaction with healthcare services. Self-efficacy in medication use and Quality of Life Self-efficacy in medication use is associated with the following dimensions of Quality of Life:

- Quality of Life (overall): A negative correlation is observed ($r = -0.358$, $p < 0.001$), indicating that higher levels of self-efficacy in medication use may be associated with lower perceived quality of life.
- General Quality of Life: A negative correlation is observed ($r = -0.372$, $p < 0.001$), possibly indicating that self-efficacy in medication use affects the overall sense of well-being and health.
- Social Quality of Life: A negative correlation is also observed ($r = -0.289$, $p = 0.001$), indicating that social dimensions of life are negatively affected by self-efficacy in medication use.

Quality of Life and Satisfaction Subscales Quality of Life (overall) is positively related to several Satisfaction subscales:

- Accessibility and Convenience: A strong positive correlation is observed ($r = 0.706$, $p < 0.001$), indicating that patients who find it easy to access health services perceive a higher quality of life.
- Financial Aspects: A positive correlation is observed ($r = 0.346$, $p < 0.001$), demonstrating the importance of financial accessibility for quality of life.
- Time with the Doctor: There is also a positive correlation ($r = 0.480$, $p < 0.001$), highlighting the importance of a satisfactory interaction with the doctor.

Moreover, there were statistically significant and negative correlations of the 4 dimensions of QOL with SEAMS as well as technical quality (**Table 16**).

Linear regression analysis was also performed indicating the statistically significant correlation of measured global quality of life with SEAMS but not of general satisfaction (**Table 17**).

	Category	N	%
Gender	Male	50	38,50%
	Female	80	61,50%
Marital status	Single	59	45,40%
	Married	60	46,20%
	Divorced	6	4,60%
	Widower	3	2,30%
	Other	2	1,50%
Number of children	No	68	52,30%
	One	31	23,80%
	Two	25	19,20%
	Three or more	6	4,60%
Educational title	Secondary education	64	49,20%
	Technological education	27	20,80%
	University education	24	18,50%
	Master (MSc, MBA, etc.)	6	4,60%
	PhD	2	1,50%
Employment status	Civil servant	23	17,70%
	Private employee	21	16,20%
	Unemployed	20	15,40%
	Housework	12	9,20%
	Student	7	5,40%
	Other	47	36,20%
Health insurance	Private	7	5,40%
	Public	111	85,40%
	Uninsured	11	8,50%
Other disease	Yes	22	16,90%
	No	108	83,10%
Type of hemoglobinopathy	Thalassemia	118	90,80%
	Microsickle cell anemia	7	5,40%
	Other	5	3,80%
Taking medication	Yes	121	93,10%
	No	9	6,90%

Table 1: Frequencies of demographic and clinical responses.

	N	Minimum	Maximum	M	SD
Age	130	20	75	43,70	10,994
Years since diagnosis of the disease	130	1	64	37,07	13,657
Years of treatment	130	1	59	32,50	13,106
Valid N (listwise)	130				

Table 2: Descriptive statistics on ages and years since diagnosis and treatment of participants.

	N	Minimum	Maximum	M	SD
Positive satisfaction questions	130	1,00	4,67	2,6761	,75118
Negative satisfaction questions	130	1,33	5,00	3,0795	,70453
Valid N (listwise)	130				

Table 3: Descriptive statistics for groups 1 and 2.

	Minimum	Maximum	M	SD
General satisfaction	1,00	4,50	2,7769	,63509
Technical quality	1,25	4,25	2,9827	,52384
Interpersonal behavior	1,00	5,00	2,5615	,65891
Communication	1,00	4,50	2,8000	,59585
Economic aspects	1,00	5,00	3,1269	,61729
Time with the doctor	1,00	4,50	2,9500	,63444
Accessibility convenience	1,00	4,50	2,8596	,57230
Valid N (listwise)				

Table 4: Descriptive statistics of the 7 variables of PSQ-18.

Reliability test		
Cronbach's alpha	Cronbach's alpha based on if item is dropped	Number of questions
,783	,711 to ,784	18

Table 5: Degree of reliability of PSQ-18 questions.

Reliability test		
	Cronbach's alpha	Number of questions
Positive satisfaction questions	,871	9
Negative satisfaction questions	,805	9

Table 6: Degree of reliability of the questions of the two groups of PSQ-18.

Reliability test	
	Cronbach's alpha
General satisfaction	,662
Technical quality	,660
Interpersonal behavior	,693
Communication	,706
Economic aspects	,693
Time with the doctor	,675
Accessibility convenience	,658

Table 7: Degree of reliability of the 7 variables of PSQ-18.

	N	Minimum	Maximum	M	SD
If you take many different medications every day	130	1	3	2,62	,576
If you take medication more than once a day	130	1	3	2,59	,524
If you are not at home	130	1	3	2,19	,738
If you have a busy day	130	1	3	2,15	,709
If medications cause any side effects	130	1	3	2,14	,795
If no one reminds you to take your medicine	130	1	3	2,54	,637
If the program to take the drug is not convenient	130	1	3	2,35	,655
If your daily routine breaks down	130	1	3	2,27	,620
If you are not sure how to take the medicine	130	1	3	2,26	,732
If you are not sure what time of day you should take your medicine	130	1	3	2,35	,725
If you feel sick (have a cold or have the flu)	130	1	3	2,08	,758
If you take your old medicines again and some pills look different from the usual ones	130	1	3	2,50	,685
If your doctor changes your medicines	130	1	3	2,55	,648
If you are not sure how the medicine works or what it offers you	130	1	3	2,23	,629
How confident are you that you will be able to pay for your medication?	130	1	3	2,20	,820
How confident are you that you will be able to go to the pharmacy to get your medicines?	130	1	3	2,64	,584
Overall SEAMS rating	130	16	48	37,10	5,40

Table 8: Descriptive statistics of SEAMS questions.

Reliability test	
Cronbach's alpha	Number of questions
,873	16

Table 9: Degree of reliability of SEAMS questions.

		M	SD	N
Social quality of life (Social Qol)	How would you characterize your physical health right now?	2,15	,849	130
	How would you characterize your mental health right now?	2,22	,915	130
	How do you feel about yourself right now?	2,06	,765	130
	How is your ability to work right now?	2,35	1,063	130
	How would you assess your quality of life now?	2,19	,872	130
General quality of life (Global Qol)	How are your relationships with your friends right now?	1,72	,835	130
	How is your relationship with your partner right now?	2,73	2,007	130
	How would you characterize your ability to fall in love right now?	2,53	1,142	130
	How would you characterize your sexual functioning right now?	2,24	,947	130
	How would you characterize your social activity right now?	2,03	,980	130

Table 10: Descriptive statistics of QOL-10 questions.

Descriptive				
	Self-assessed (global) quality of life	Measured global quality of life	Ability	Health-QOL-ability
N	130	130	130	130
Missing	0	0	0	0
Mean	2.19	3.63	2.29	2.70
Median	2.00	3.33	2.00	2.56

Standard deviation	0.872	1.31	0.823	0.887
Minimum	1	1.67	1.00	1.22
Maximum	5	7.67	4.75	5.22

Table 11: Descriptive statistics of QOL -10 dimensions.

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		,900
Bartlett's test of sphericity	Approx. Chi-square	614,929
	Degrees of freedom	45
	P-value	<,001

Table 12: KMO and Bartlett's test.

Factor Matrix ^a		
	Factor 1	Factor 2
	Social QOL	Global QOL
How would you characterize your physical health right now?		,632
How would you characterize your mental health right now?		,771
How do you feel about yourself right now?		,756
How are your relationships with your friends right now?	,625	
How is your relationship with your partner right now?	,424	
How would you characterize your ability to fall in love right now?	,597	
How would you characterize your sexual functioning right now?	,788	
How would you characterize your social activity right now?	,675	
How is your ability to work right now?		,739
How would you assess your quality of life now?		,803

Table 13: Social QOL & global QOL factor analysis.

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Health care satisfaction	,115	130	<,001	,947	130	<,001
Self-efficacy in the use of drugs	,070	130	,200*	,973	130	,010
Quality of life	,113	130	<,001	,952	130	<,001

Table 14: Kolmogorov-Smirnov and Shapiro-Wilk regularity test. *: This is a lower bound of the true significance; a: Lilliefors significance correction.

		Technical quality	Inter-personal behavior	Communication	Economic aspects	Time with the doctor	Accessibility convenience	Self-efficacy in the use of drugs	Satisfaction with health care	Quality of life	Social Quality of Life	General Quality of Life
General satisfaction	Cor	,287**	,324**	,228**	0,109	,255**	,359**	-0,024	,591**	0,000	0,031	-0,005
	Sig.	0,001	0,000	0,009	0,216	0,003	0,000	0,782	0,000	0,999	0,725	0,954
Technical Quality	Cor	1,000	,192*	,345**	,246**	,305**	,250**	-0,030	,630**	-0,166	-,185*	-0,086
	Sig.		0,028	0,000	0,005	0,000	0,004	0,733	0,000	0,059	0,035	0,332
Interpersonal Behavior	Cor		1,000	0,094	,334**	,313**	,337**	0,041	,587**	-0,070	-0,069	-0,056
	Sig.			0,287	0,000	0,000	0,000	0,643	0,000	0,430	0,432	0,529
Communication	Cor			1,000	0,066	0,132	,226**	-0,047	,421**	0,068	0,028	0,107
	Sig.				0,453	0,134	0,010	0,592	0,000	0,441	0,751	0,224
Economic aspects	Cor				1,000	,175*	,346**	0,029	,489**	-0,044	0,045	-0,131
	Sig.					0,046	0,000	0,747	0,000	0,621	0,610	0,137
Time with the doctor	Cor					1,000	,226**	0,041	,480**	-0,016	0,007	-0,033
	Sig.						0,010	0,641	0,000	0,859	0,936	0,709
Accessibility Convenience	Cor						1,000	0,039	,706**	0,113	,188*	0,053
	Sig.							0,662	0,000	0,200	0,032	0,553
Self-efficacy in the use of drugs	Cor							1,000	-0,019	-,358**	-,289**	-,372**
	Sig.								0,827	0,000	0,001	0,000
Satisfaction with health care	Cor								1,000	0,008	0,055	-0,014
	Sig.									0,924	0,537	0,872
Quality of life	Cor									1,000	,924**	,912**
	Sig.										0,000	0,000
Social Quality of Life	Cor										1,000	,698**
	Sig.											0,000

Table 15: Correlation of variables (health care satisfaction, self-efficacy in drug use, and quality of Life and their subscales) with Spearman coefficient.

Correlation matrix							
		Technical quality	Self-efficacy in the use of drugs	Self-assessed (global) quality of life	Measured global quality of life	Ability	Health-QOL-Ability
Technical quality	Spearman's rho	—					
	df	—					
	p-value	—					
Self-efficacy in the use of drugs	Spearman's rho	-0.030	—				
	df	128	—				
	p-value	0.733	—				
Self-assessed (global) quality of life	Spearman's rho	-0.039	-0.289***	—			
	df	128	128	—			
	p-value	0.662	< .001	—			
Measured global quality of life	Spearman's rho	-0.197*	-0.326***	0.581***	—		
	df	128	128	128	—		
	p-value	0.024	< .001	< .001	—		
Ability	Spearman's rho	-0.074	-0.286***	0.691***	0.658***	—	
	df	128	128	128	128	—	
	p-value	0.403	< .001	< .001	< .001	—	
Health-QOL-Ability	Spearman's rho	-0.154	-0.362***	0.828***	0.897***	0.866***	—
	df	128	128	128	128	128	—
	p-value	0.080	< .001	< .001	< .001	< .001	—

Table 16: Correlation of variables (health care satisfaction, self-efficacy in drug use, and quality of life and their subscales) with Spearman coefficient. Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Model coefficients - measured global quality of life				
Predictor	Estimate	SE	t	p
Intercept	6.3400	1.090	5.815	< .001
SEAMS	-1.0686	0.274	-3.903	< .001
General satisfaction	-0.0683	0.296	-0.231	0.818

Estimated marginal means - SEAMS				
			95% confidence interval	
SEAMS	Marginal mean	SE	Lower	Upper
1.95 ⁻	4.06	0.155	3.75	4.36
2.35 ^μ	3.63	0.109	3.41	3.84
2.75 ⁺	3.20	0.155	2.89	3.51

Table 17: Linear regression analysis of global quality of life with SEAMS and general satisfaction. Note: ⁻ mean - 1SD, ^μ mean, ⁺ mean + 1SD.

4. Discussion

The present study aimed to investigate the levels of quality of life in Greek patients undergoing repeated transfusions, to investigate the ability to adhere to their treatment and the level of health care they receive. Also, the correlation between the three

variables, quality of life, compliance and health care they receive, as well as the correlation with other demographic or clinical factors, was investigated. From the analysis of demographic data, some information emerges about the participants of this study. The average age of the participants is 43.7 years, while their ages range from 20 to 75 years of

age, which shows diversity in the sample. The majority of the sample consists of women, while the majority is also either married or single. The educational level ranges from secondary education to higher education, therefore the sample has a relatively good educational background. Their employment status is also characterized by its diversity, as 36.2% of the participants are classified in "Other" occupational status categories, while the percentages of public and private employees are close to 17.7% and 16.2% respectively. Most patients suffer from Mediterranean anemia, as this disease affects 90.8% of the sample, while only 5.4% have sickle cell anemia. The years since the diagnosis of the disease are on average 37.07 years, which indicates that the participants live with the disease for a long time. 93.1% receive medication, while the average number of years of treatment is 32.5 years. This fact shows the long-term burden of patients from the pharmaceutical management of the disease and may affect their experiences and their opinions on medications. Patients with hemoglobinopathies in this study report a moderate overall quality of life, which was assessed in two main dimensions: Social Quality of Life and General Quality of Life. Social Quality of Life included questions about social and personal relationships and showed relatively low mean values, indicating moderate satisfaction in this area. General Quality of Life, which covers the perception of physical and mental health, presents mean values around 2.5, indicating a moderate perception of overall quality of life. These results contrast with the findings of the study conducted in Crete by Rikos et al. [6], where patients presented similar scores to the healthy population, while in a study conducted by Klonizakis et al. [2] although patients with hemoglobinopathies had a lower quality of life than the general population, they also had good HRQol scores. The differences in quality of life experienced by patients may be due to the great heterogeneity between populations. In addition, the quality of life of patients with hemoglobinopathies is influenced by many other factors, such as, for example, according to Rodigari et al. [3] the level of health services they receive and compliance with treatment. Finally, according to Rodigari et al. [3] it is also influenced by other clinicodemographic factors, such as, for example, level of education or age.

The patients in this study show moderate satisfaction with the healthcare they receive, with the main factor of discomfort being the financial burden for managing the disease. In a study conducted on Greek patients with hemoglobinopathies, Markouri et al. [7] reported patients' discomfort due to the high financial burden due to frequent medical examinations, the use of medications and the costs of frequent travel. Also, the study by Markouri et al. [7] reports the same findings as the present study, regarding patients' satisfaction with communication with healthcare personnel, which was adequate, but not exceptional. In addition, the accessibility and convenience of services are at

satisfactory levels, but with room for improvement, while patients recognize an acceptable technical quality in care and a positive attitude and behavior of the staff. In the present study, a strong positive correlation is observed ($r = 0.706$, $p < 0.001$), indicating that patients who find it easy to access health services perceive a higher quality of life. The value of access to health services is also highlighted by the study conducted in Palestine by Kohlbry et al. [13] where patients present low levels of quality of life due to limited access to health services and resources, due to frequent conflicts in the region. Quality of life is positively correlated with the subscale of satisfaction with healthcare that concerns Financial Aspects ($r = 0.346$, $p < 0.001$), demonstrating the importance of financial accessibility for quality of life. There is also a positive correlation with the subscale of satisfaction with healthcare that concerns Time with the Doctor ($r = 0.480$, $p < 0.001$), highlighting the importance of satisfactory interaction with the doctor. Finally, the negative correlation between SEAMS and QOL is considered to be an issue of a great importance as it may bring to our notice the fact that perhaps a pressure from family environment to comply with the treatment brings adverse implications.

5. Future Research and Limitations

This specific study included certain factors that may affect quality of life, patient compliance with medication use and satisfaction with the healthcare provided, however, patients' experiences, the way they perceive the effects of the disease and the way they manage it are influenced by various dimensions. The data collected are based on patient self-report and not on clinical data, therefore the study studies the patients' subjective view of their quality of life. The hospitals selected for the study are located within a specific geographical area and serve a specific number of patients. Also, the time period for conducting the study was determined by the available time set by the University for the completion of the diploma thesis. Therefore, the sample is small and may not reveal significant correlations in the data. It would be interesting to conduct more studies in Greece that study the quality of life in patients with hemoglobinopathies, using more variables and evaluating more dimensions. It would also be beneficial to obtain data from a larger number of patients, which would allow for the identification of more significant associations and the generalizability of the results. Finally, studies could be conducted that include objective measures that could verify the results obtained based on patient self-report.

6. Conclusion

The findings of this study show that patients with hemoglobinopathies in Greece report moderate levels of quality of life, moderate satisfaction with health care, and moderate self-confidence regarding their self-efficacy in the use of medications. The quality of

life of patients with hemoglobinopathies seems to improve when they have easy access to health services, when the doctor who attends them devotes sufficient time to them, and when they can afford the costs of treatment. Carrying out this research provides information regarding the levels of quality of life of Greek patients, as well as the factors that influence them. This information can help institutions and those responsible for drawing up health policies, in planning and implementing targeted interventions. Recognizing the real needs of these patients will help improve the health services provided, improve their health, and increase their levels of quality of life.

Author's Contribution

It is hereby acknowledged that all authors have accepted responsibility for the manuscript's content and consented to its submission. They have meticulously reviewed all results and unanimously approved the final version of the manuscript.

Ethics Approval and Consent to Participate

Having received approval from the scientific councils of the participating hospitals (approval numbers 12587, 24287, 213).

Human and Animal Rights

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

Consent for Publication

Informed consent was obtained from all participants.

Standards of Reporting

STROBE guidelines were followed.

Availability of Data and Materials

The data and supportive information are available within the article.

Conflicts of Interest

The authors declare no conflict of interest financial or otherwise.

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