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Socioeconomic, health status and hospitalization aspects of adult patients referred to the social service of a tertiary hospital

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Abstract
Objective The aim of this study is to record and analyze socioeconomic, demographic and health profiles of adult patients referred to the Social Service of a tertiary Hospital, as well as to present additional hospitalization conditions.
Methods A retrospective hospital archive study containing all patients referred to the Social Service during a four-year period was conducted.
Results The study consisted of 350 patients (168 males) with mean age 70.1 years. Most of the patients were of Greek origin and singles or divorced. 184 patients (52.6%) were retired. The participants' average income ranged between 500 and 1000 euro/month. Most of the patients were insured by the Government (public health insurance) and were hospitalized in Pathology and Covid Clinics, with a mean hospitalization level of 17.6 days. The main reasons for referral were admission to an Aged Care Unit and the need to investigate network support. The most frequently recorded diagnosis was Covid-19, while 103 (29.4%) patients had a mental illness problem. The analysis of associations between demographic characteristics with health dimensions showed significant differences.
Conclusions Changes in socioeconomic conditions have an impact on outpatient and inpatient care as well as on Greek social work practice and pose enormous challenges to social work professionals.

Keywords Health social work · Social service · Health system · Socioeconomic conditions · Hospital care

1 Introduction

The National Health System of Greece (called ESY) was established in 1983 [1] with many reforms implemented over the decades. ESY is a mixed system, encompassing elements from the two main types of health care systems (i.e. Beveridge and Bismarck) and combines models based on private and public health services, with a dominant public sector [2]. Since 2011, Greece has adopted a highly centralized mixed health system model, which combines a single health insurer that collects contributions with significant funding from the central government. The National Organization for the Provision of Health Services (EOPYY) manages a unified health insurance fund and purchases publicly funded health services provided by the National Health System. Socioeconomic and environmental factors such as population ageing, economic crisis and Sars-Cov-2 pandemic as well as individual patient characteristics may affect the demand for hospital care. Social inequalities could also affect the demand for acute hospital care [4] as well as the reasons why patients are

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referred to the hospital social service. Consequently, monitoring access to and use of health services at the national level, in a systematic and thorough manner is crucial for measuring health equity and assessing whether it is threatened by extensive health sector reforms [5].

Hospital Social Services were established with a relevant circular of the Greek Ministry of Health and Welfare in 1956 [6] even though the first social workers in health services and hospitals had already appeared in the 1950s. The role of the Hospital Social Service according to the Government Gazette 32/t.a/27-0-86 (par. 3/art. 10) [36] is "the responsibility and support of hospital patients in every social problem. The search and investigation of the causes that lead to these problems on a case-by-case basis and in general the care and psychological support on the context of the general Social Policy of the State".

In particular, the role of the Hospital Social Service is to provide counselling and psychosocial support, facilitate communication between medical staff and patients, especially those with low socioeconomic status, and advocate for these patients with the country's medical and social welfare bureaucracies [7]. Medical social workers utilize psychosocial interventions based on a person-in environment approach, as they aim to activate the resources available in all interconnected systems to facilitate the transition from health care facilities to families and communities, ensuring continuity of care and improving or restoring the state of health [8]. Concern and informing the patient's relatives about outpatient and post-hospital care and rehabilitation options are also part of medical social workers` duties. Out-of-hospital and post-hospital care can refer to the admission of a patient to an Elderly Care Unit (nursing home), rehabilitation center and hospice or even joining a home care program with a team of health professionals. Many of these Services are offered at a reduced fee mainly to insured citizens, but many others operate in the private sector. Reducing inequality in healthcare arising from a wide variety of individual characteristics, including age, socioeconomic and resident status, is also a major part of the Social Service's role. The association between physical illness and social conditions is well-documented [9], yet at the present there is no official system for recording socioeconomic, demographic and health profiles of inpatients referred to the Social Services.

Therefore, the aims of the present study are: (1) the determination of the number and characteristics of adult patients referred to the Social Service of a tertiary hospital in Greece, (2) the presentation of their health and functional status, (3) the calculation of the duration and other hospitalization conditions and (4) the presentation of the reasons for their referral to the Hospital Social Service and the outcome of the cases.

2 Materials and methods

A retrospective archive study was carried out containing all patients referred to the Social Service of the Pammakaristos Hospital of Divine Providence. Pammakaristos is a tertiary public general hospital operating in metropolitan Athens since 1953 [10]. In particular, it is a hospital with limited capacity (170 beds, actual capacity based on staff: 117 beds). The hospital consists of the following Clinics: Pathology, Surgery, Cardiology, Neurology, Ophthalmology, Otorhinolaryngology, Outpatients and Emergency, Advanced Care Unit. In addition, the Pammakaristos Hospital operates Dermatology, Gastroenterology, Microbiology, Physiotherapy, Diabetes and Hematology Departments. Since March 2020 and almost until the end of May 2021, it was designated as a Covid-19 center, aiming to treat patients with up to "moderate" severity of Covid-19 infections [11], resulting in the establishment of a Covid-19 Clinic.

A dataset was created from the records of the Hospital Social Services Department, containing all patients referred to the Department over a four-year period (October 2018–October 2022). For each case, the following variables were taken into account in advance: *Main demographic characteristics*: gender, age and resident status / *Family circumstances*: marital status and offspring/*Financial status*: source of income, monthly income and property status/*Hospitalization profile*: health insurance, clinic and duration of hospitalization/*Referral status*: referral source and referral request/*Health and functionality status*: admission cause, current diagnosis, functionality and bidity/*Mental health condition*: mental health disorder, diagnosis and medication/*Social support*: living alone, informal care networks and private care/*Case outcome*.

All data were anonymized in observance with the current European Union General Data Protection Regulation (GDPR). The study was approved by the Scientific Committee of the Pammakaristos Hospital of Divine Providence.

Study data was recorded in a database created with the IBM SPSS Statistics 21.0 statistical platform. Due to the nature of the data (categorical variables), the results are presented based on frequency and percentage. Crosstab analysis was assessed for the association between demographic characteristics and health dimensions. All statistical analyses were performed using IBM SPSS Statistics 21.0.

3 Results

According to the Hospital's database system, 15,104 patients were hospitalized in a four-year period from October 2018 to October 2022. In addition, a total of 131,511 patients attended outpatient clinics. A total of 1,153 of these adult patients (n = 1153, 758 Covid-19 patients) were referred and registered with the Social Service during the same four-year period. The final sample that met all the variables we were interested in a priori consisted of 350 adult patients (168 men) referred to the Social Service. A notable difference is observed between the number of cases referred to the social service and the number of cases that constituted the study sample. However, it is very difficult to obtain the social history and personal information of patients who are unable to communicate or suffer from memory impairment due to various health problems. In fact, there are cases of such patients who have no relative or companion to provide this important personal information for them. The mean age (SD) of our sample was 70.1 (19.09%) years (range: 19–103 years). Of these, 281 (80.3%) were of Greek origin and 69 patients were of other nationality. 43 (12.3%) patients were registered in Greece and 26 (7.4%) had no legalization documents (Table 1).

Due to the large number of non-Greek patient's countries of origin, the five most frequently occurring countries were recorded. These countries are Albania (n = 8) followed by Afghanistan (n = 6). Iraq, Egypt and Pakistan are tied with 4 patients each. Regarding marital status, almost half of the patients (47.4%) were not married (single or divorced) followed by 116 (33.1%) widowed patients and 68 (19.4%) married or cohabiting patients. Most patients (56%) had children. The mean number of children is 1.14, while 8 (2.3%) patients were single parents. Additionally, referring to specific psychosocial circumstances, 57 (15.3%) patients had a history of substance use (drugs, alcohol, tobacco) or gambling, and 5 (1.4%) patients had a history of delinquency.

As far as the financial status is concerned, 184 patients (52.6%) were retired, 45 (12.8%) were benefits receivers (social solidarity, asylum applications, unemployment or disability), 32 (9.1%) were pensioners (uninsured or disability). 24 patients (6.9%) were employed and 23 (6.6%) were financially supported by family and/or friends. The remaining patients were of unknown financial status. Most patients (37.1%) received less than 500 euro monthly income. The monthly income of the patients in the sample is presented in Table 2.

According to housing status, most patients (44.9%) lived in private residence and 18.6% rented a house, 17.4% of patients were hosted or lived in granted residence, 5.4% of them were under institutional care (asylum seeker camp, homeless or abused shelter), followed by 6.9% of homeless patients. The remaining patients belonged to another or an unknown housing group.

Health insurance, Hospital clinic and length of hospitalization are variables which make up the Hospitalization profile of the study sample. 243 (69.4%) patients were insured by the Government (public health insurance) and 107 (30.6%) were with no health insurance. The most frequently recorded inpatient clinic was Pathology with 180 (51.4%) patients, followed by the Covid-19 clinic where 102 (29.1%) patients were treated, and Social Services where 24 (6.9%) patients

Table 1 Descriptive characteristics of study sample (n = 350)

Gender	n	%
Men	168	48.0
Women	182	52.0
Age (years)	n	%
18-40	37	10.6
41-60	66	18.9
61-80	119	34.0
81^{+}	128	36.6
Age in years (mean)	70.19	
Resident status		
Greeks	281	80.3
Other with legitimizing documents	43	12.3
Othes without legitimizing Documents	26	7.4

Table 2 Monthly income of study sample (n = 350)

Monthly income amount	N	%
< €500	130	37.1
€500-1000	127	36.3
> €1000	14	4.0
No available data	79	22.6
Total	350	100

were referred from the Emergency Department. The rest of the patients were treated in the remaining clinics of the Hospital. Maximum length of stay was 307 days; mean (SD) 17.6 (27.8%) days.

207 (59.2%) patients were referred to the Social Service by the medical and nursing staff. 125 (35.7%) patients addressed the Service at their own request. The remaining referrals were made by the Service's social workers who identified psychosocial spectrum problems, physiotherapists as well as by external referral sources. The reason for referral of 79 (22.6%) patients was admission to an Elderly Care Unit. 79 (22.6%) patients were referred due to the need for network support research, 74 (21.1%) patients were in need of psychosocial counseling, and 42 (12.0%) addressed the Service due to the need for Community Services. 23 (6.6%) patients were referred due to the need to participate in a home care program, and 22 (6.3%) for their data identification. 15 (4.3%) patients needed to be admitted to a rehabilitation center, 8 (2.3%) sought information on benefits policy, and 5 (1.4%) for admission to a Palliative Care Center/hospice.

In regards to the patients' health status, the main reason for admission to the Hospital for 97 (27.7%) patients was Covid-19 (ICD-10: U07.1), and for 25 (7.1%) patients was stroke, not specified as haemorrhage or infarct (ICD-10: I64). The remaining patients were admitted to the Hospital due to 105 different ICD-10 diagnoses-diseases. Table 3 presents the main final diagnosis following the completion of the medical examination and hospitalization.

The category of other health problems / diagnoses consists of a plethora of different health problems and diagnoses. In regards to functionality status, 145 (41.4%) patients were ambulatory and functional, 86 (24.6%) were semi-functional and 119 (34.0%) were bedridden. In addition, 229 (65.4%) patients had additional health problems (multimorbidity), while 121 (34.6%) had only one main diagnosis. As shown in Table 4., crosstab analysis indicated that female patients ($p < 0.05$) above 81 years old ($p < 0.01$) had higher prevalence of multimorbidity (Table 4).

Concerning the disability and mental health of study`s patients, 11 (3.1%) of them had been diagnosed with a congenital form of disability. 103 (29.4%) patients were experiencing mental health problems. Of these, 59 (16.9%) patients had been diagnosed with memory disorders, 18 (5.1%) with mood disorders, 17 (4.9%) with psychotic disorders, 3 (0.9%) patients had nutritional disorders, 2 (0.6%) suffered from anxiety disorders and one (0.3%) patient had psychoorganic syndrome. 3 (0.9%) patients had no specific diagnosis. 82 (23.4%) patients were under psychiatric medication.

Social support is described by living alone, informal care networks and private care. The vast majority of 277 (79.1%) patients were supported by informal care networks, 152 (43.4%) patients lived alone and 53 (15.1%) were under the care of professional careers-nurses.

In terms of incident outcome, 229 (65.4%) patients were discharged home [in some cases (e.g.) to an Institution or homeless shelter]. There were 46 (13.1%) deaths in this sample of adult patients. 30 (8.6%) patients were placed in private Elderly Care Units, 18 (5.1%) were transferred to another hospital and 14 (4%) patients were placed in semi-public Elderly Care Units. 6 (1.7%) patients were placed in a private and 5 (1.4%) patients in a public rehabilitation center. Two (0.6%)

Table 3 Health problem/ diagnosis of study sample (n = 350)

Healthproblem/Diagnosis	N	%
COVID-19	99	28.3
Cerebral episode	49	14.0
Dementia	27	7.7
Health problems related to aging	22	6.3
Cancer (various forms)	20	5.7
Diabetes	17	4.9
Other	116	33.1
Total	350	100

Table 4 Analysis between gender, age groups and multimorbidity

Multimorbidity	No	Yes	Total
Gender			**0.026 P-Value**
Males	68 (19.4)	100 (28.6%)	168 (48.0%)
Females	53 (15.1%)	129 (36.9%)	182 (52.0%)
Total	121 (34.6%)	229 (65.4%)	350 (100.0%)
Age groups			**0.000 P-Value**
18-40 y.o.	25 (7.1%)	12 (3.4%)	37 (10.6%)
41-60 y.o.	26 (7.4%)	40 (11.4%)	66 (18.9%)
61-80 y.o.	45 (12.9%)	74 (21.1%)	119 (34.0%)
81^{+} y.o.	25 (7.1%)	103 (29.4%)	128 (36.6%)
Total	121 (34.6%)	229 (65.4%)	350 (100.0%)

Bold fonts indicate statistical significance at 0.05.

patients were admitted to a public psychiatric clinic. Lastly, only for 8 (2.3%) patients of the total sample of 350, relatives and/or friends applied for their Guardianship.

4 Discussion

This is one of the few studies presenting the characteristics and health status of adult patients referred to the Social Service of a tertiary Hospital in Greece. The present study's sample consisted of more female (n = 182) patients who were hospitalized due to a health problem and referred to the Social Service. This could not be a random finding given the fact that in Greece women make up the majority of the population [12]. In addition, studies have shown that women are more likely than men to seek health care, and several explanations have been given. These differences may be associated with reproductive biology and sex-specific conditions, women's higher morbidity rates compared to men's, differences in health perceptions and reporting of symptoms and illnesses, or women's higher likelihood of seeking help for prevention and disease [13]. Also, research has indicated that there is a gender gap in service use and attitudes, and that on average men hold a more negative attitude towards seeking psychological help than women do [14]. The mean age of the study's sample was 70.1 years (range: 19–103 years). According to the latest data, published in 2020, the life expectancy in Greece is 78.6 years for men and 83.7 for women, and the total life expectancy is 81.1 years [15]. The aging population consists mostly of women. According to the Greek Statistical Authority (2011), women prevail as we move to higher age groups, reaching 60.27% in the 80 + age group [12]. Most of the patients of the current study were of Greek origin. The number of refugees and migrants entering the country has increased [16] and refugees are entitled to the same services as Greek citizens since 2016 [3]. However, studies show that the lack of interpreters and cultural mediators, the differences between the Greek health system and that of the country of origin and logistics, including the distance of secondary care from the camps [17], are some of the most frequently stated barriers to accessing health care by refugees and migrants in Greece.

The majority of patients (69.4%) were insured by the Government (public health insurance). Nonetheless, for the remaining 107 (30.6%) patients no health insurance compensates for the low quality and inefficiency of health services. The Greek health system provides free access to health care services to all citizens [5]. The National Health System offers access to a unified package of benefits which includes primary care, diagnostic and specialized outpatient and inpatient care [3]. The right of free access to all public health structures for the provision of nursing, medical and pharmaceutical care to uninsured and vulnerable social groups was established for the first time in Greece by law (4368) in 2016 [18]. The beneficiaries of this law were estimated at 2.5 million citizens for 2016.

In regards to health problem / diagnosis of patients, the main one (28.3%) was Covid-19. Specifically in Greece, from January 2020 to March 7, 2023, there have been 5,896,788 confirmed cases of Covid-19 with 36,283 deaths reported to the WHO [25]. The second most often recorded health problem / diagnosis of patients, was cerebral episode (14.0%). The latest epidemiological studies for Greece show a high incidence of strokes, ranging widely from 117 to 534 new cases, with a 28-day mortality rate exceeding 20% [44]. The third most often recorded health problem / diagnosis of this study`s patients, was dementia (7.7%) which is probably related to the high mean age of the study's sample

(70.1 years). The prevalence of dementia and its subtypes in Greece is similar or at the lower range of that reported in many other European countries and globally [45]. According to the Greek National Observatory for Dementia—Alzheimer, there are 200,000 people living with dementia in Greece [46]. One health problem / diagnosis between of the high recorded in our study, was cancer (5.7%) followed by diabetes (4.9%). According to the International Agency for Research on Cancer (IARC) of WHO, the number of new cancer cases was 65,703 while the number of deaths was 32,385 for both sexes during 2022 in Greece [47]. Additionally, over the last decades, several epidemiological studies, have estimated diabetes prevalence in Greece [48], based on real-world data from the nationwide prescription database, reported the prevalence of drug-prescribed diabetes in Greece was 7.0% (720,764 individuals). According to the International Diabetes Federation estimates for 2019, the prevalence of diabetes in Greek adults (20–79 years) was 7.4% and the diabetes-related deaths was 3,231 [49].

During the Covid-19 pandemic, a large percentage of patients were transferred to the Hospital's Covid-19 Clinic for treatment from the outpatient clinics of other hospitals in the Prefecture. Due to the large number of admissions, for many of these patients there was either no identifying data or no contact information for their next of kin. This was one of the main requests to the Social Service, regarding Covid-19 patients. An additional request was the admission of the patient to a quarantine hotel, in cases where no other quarantine area was available. Finally, another reason for referral of patients with Covid-19 to the hospital Social Service was their admission to a partner rehabilitation unit due to the effects of the virus. Given that the Covid-19 pandemic has increased pressure on healthcare facilities [19], hospital social workers make patient referrals to appropriate institutions and connect individuals to services and resources in nursing homes and clinics [20] for further care. Social work provides adequate and appropriate services in the outbreak of pandemics and other emergencies [21]. Indeed, social workers have contributed in all sectors including the healthcare settings [22]. During the Covid-19 pandemic, social workers brought professional skills, competencies, and knowledge to the social determinants of health to help individuals, families, and communities [23].

The mean age of patients diagnosed with Covid-19 was 69.9 years. In this sample of adult patients, there were 46 (13.1%) deaths. According to the Greek Statistical Authority, the main causes of death in 2018, 2019 and 2020 were diseases of the circulatory system (29,804–31,275 deaths), deaths from neoplasms (30,331–30,829), deaths caused by diseases of the respiratory system (12,576–13,591) and deaths from brain diseases (12,574–13,022) [24]. In Greece, from January 2020 to March 7, 2023, there have been 5,896,788 confirmed cases of Covid-19 with 36,283 deaths reported to the WHO [25]. More specifically, the deaths from Covid-19 were 5282 (2955 men and 2073 women) during 2020. Most of these deaths occurred in the over 75 age group (3226 deaths) [24]. It is worth mentioning that the rate of preventable mortality in Greece (139) has decreased slightly over the last years, but it is considerably lower than the mean average of the 27 EU countries (160). Greece has better rates in preventable mortality than in mortality from treatable causes [3]. At this point, it is worth noting that only 8 (2.3%) patients admitted to the Hospital for problems related to social environment (ICD-10: Z60) and 74 (21.1%) patient referral requests were for psychosocial counseling. Given the mean age of 70.1 years of patients in the study's sample and that 247 (70%) hospitalized patients were from the 61 + age group, the main reason for referral to Social Services (22.6%) was admission to an Elderly Care Unit. A significant percentage of the reasons for referral (18.6%) was occupied by referral for community Services (12.0%) and inclusion in home care programs (6.6%). Greece implements various programs for the outpatient care of the elderly as long-term care benefits. The main programme, well known as "*Aid at Home*" provides domestic assistance to elderly people who live alone constantly or for some hours a day and cannot adequately take care of themselves as well as to disabled people facing situations of isolation, exclusion or family crisis [26]. One more program is the "*Day Care Centre for the Elderly*" which provides day care facilities for elderly individuals who cannot fully care for themselves (due to mobility problems, dementia, etc.) and whose families are unable to contribute to the care because of work or serious socioeconomic and/or health problems [26]. The last program is the "*Open Protection Centre for the Elderly*" which is intended for residents living in the geographical area of responsibility of each Center and are over 60 years of age, regardless of their financial and social status.

According to the Economic Co-operation and Development and the European Observatory on Health Systems and Policies (2021), Greece spends significantly less on outpatient (home care and ancillary services) and long-term care than most EU countries. Cuts in social spending have reduced the availability of elderly care in the community, while families that have traditionally provided care for the elderly now lack the necessary resources [8].

In 2021, there were 36 Social Care Units (Public Law) for people with disabilities and chronic diseases and 14 Recovery and Rehabilitation Units for people with disabilities and other vulnerable groups [24]. Only one totally free of charge Elderly Care Unit and one Rehabilitation Unit operate in the Greek capital, accepting requests from elderly and sick people who are certified as living below the poverty line. Hence, the waiting list for admission to these Units is remarkably long.

The cost of entering one of the four semi-public Elderly Care Units operating in Athens is approximately 400–600 euro/month while the monthly cost of a private Elderly Care or Rehabilitation Unit starts at 700 euro. Most patients (37.1%) of our sample received less than 500 euro monthly income, followed by 127 (36.3%) patients who received between 500 and 1000 euro/month and only 14 (4.0%) patients who received more than 1000 euro/month. Greeks living on less than 60% of the median equivalent disposable income (relative poverty rate) amount to 17.9% [3]. According to Eurostat [24], Greece recorded the 3rd worst GDP per capita in the Eurozone (32% below the EE mean), which demonstrates the great difficulties faced by citizens due to the energy crisis and increased inflation. The Greek crisis caused an unprecedented deterioration in labor market conditions and, as expected, it hit young people harder [27]. The unemployment rate was 16.3% for 2021, while the rate for the 27 EU Member States was 7.1% [3]. As a result, the parental home is a refuge both for unemployed young Greeks, since they cannot make their own living, and for those with poorly paid and insecure jobs [27]. In addition, the vast majority of these young people live solely on their parents' salary or retirement pension. These cultural norms that influence living arrangements respond dynamically to economic forces to protect vulnerable youths. All the conditions, as described above, make it difficult or// if not impossible to admit elderly patients to Elderly Care or Rehabilitation Units at a monthly cost in Greece.

The vast majority of 277 (79.1%) patients were supported by informal care networks. 152 (43.4%) patients lived alone and 53 (15.1%) were under the care of professional nurse-caregivers. Informal social care networks consist of those relationships one circulates within, be it family and friends, work colleagues, neighbors, local spiritual groups, or leisure clubs [28]. Care networks typically emerge from these more general social networks in times of need to support people in any way and area they want to be supported [28]. Informal care is a common phenomenon in many countries and provides a number of benefits. In Greece, informal care activities take place in most hospitals. The patients' relatives stay by their bedside for many hours and assist the nursing staff [29]. Care networks expand to also provide home care for the sick and elderly. Relatives such as spouses or adult children usually shoulder most of the burden of informal care at home [30].

In recent decades, multimorbidity has become more prevalent in advanced societies due to population aging and increased longevity [31–33]. About 7% of the total European population suffers from multimorbidity, and this prevalence can reach to 90% in people over 85 years of age [34, 35] while the mean of these chronic diseases increases in hospitalized patients [36, 37]. This also applies to our study sample according to our findings. The current study as well as previous ones, has shown a gender difference in patterns of multimorbidity [38]. A systematic review of most prior studies indicated that women had a greater prevalence of multimorbidity compared with men [39] and this difference might be related to biological, sociocultural, environmental or economic factors [38]. As most classes of these factors are not biological, they are potentially modifiable and international scientific research may be directed towards those actions that will make them non-risk factors for multimorbidity. In many ways, chronic conditions dictate the specific day-to-day and long-term health needs of care recipients [40, 41], and thus it remains unclear whether and how informal elder care networks might reflect or address the needs of individuals with multimorbidity [30].

The findings of this study indicate that elderly patients cannot be supported at home and find it difficult to be admitted to Elderly Care Units. Given the low admission rates of patients to Elderly Care Units and their relatively long waiting time, the establishment of more Elderly Care Units and/or Intermediate Care Units contracted with health insurance funds is strongly recommended. As a result, the Greek public hospital Social Services struggle to support patients and to deal with the social problems they face in the context of state policies [42].

4.1 Strengths and limitations

This study refers to recorded data from a case file archive in the Social Service Department of a tertiary Hospital. The study of this archival material offered the possibility of recording interesting descriptive data; however, there was no control over the information initially collected. Access to the personal information of the patients and their families was limited due to their health and psychological state. Therefore, it was not possible to assess all confounding factors as suggested by the literature. Although a more detailed investigation is warranted, characteristics of adult patients referred to the Social Service of a tertiary Hospital were presented. This study provides important information on the socioeconomic and health status of adult patients, beneficiaries of the Greek national health system and their hospitalization conditions. Due to the sensitive and confidential content of these patients' characteristics, the GDPR, as well as the limited access to the Social Service record of hospitals, this research is one of the very few studies concerning the profile of hospital patients in Greece. Because of the nature and specific characteristics of archival research, this study's findings cannot contribute to future replication efforts nor to generalization to other patient groups.

5 Conclusions

Monitoring and analyzing the specific characteristics and requests of adult patients referred to the Social Service of a tertiary public general hospital is crucial to document the socioeconomic status and real needs of the national health system users. Observing these needs is essential for evaluating, reforming and modernizing the health system. The findings of the present study may signal the need for empirical research, help develop a comprehensive national health policy, and support structural health system reforms [5]. Additionally, it could be the starting point for policy makers to consider the perspective of redesigning the health care map due to the change in the profile and needs of patients seeking for health care services [43] and psychosocial support.

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Author contributions Dimitrios Mimarakis contributed to the study conception and design. Material preparation and data collection were performed by Dimitrios Mimarakis and Evanthia Providaki. Analysis was performed by Dimitrios Mimarakis. The first draft of the manuscript was written by Dimitrios Mimarakis and all authors commented on previous versions of the manuscript. Philippa Kolokotroni edited the final manuscript. All authors read and approved the final manuscript.

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Data availability The data supporting the findings of this study are not openly available for reasons of sensitivity and are available from the corresponding author upon reasonable request. The data are located in data storage with controlled access at the Social Service of the Divine Providence Hospital "Pammakaristos", Athens, Greece.

Declarations

Ethics approval and consent to participate All data was anonymized in accordance with the current European Union General Data Protection Regulation (GDPR). The study was approved by the Hospital`s Administration, the Director of Medical Department and the Scientific Committee of the hospital in accordance with the Research conducting Protocol of the "Pammakaristos" Hospital of Divine Providence.

Competing interests No potential competing interests was reported by the author(s).

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