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Healthcare-seeking behavior and out-of-pocket payments in Erbil, Kurdistan Region of Iraq

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Abstract

Background Understanding healthcare-seeking behavior and examining health expenditures can help determine possible barriers to accessing healthcare and direct more effective and inclusive healthcare systems. This study aimed to evaluate healthcare-seeking behavior and out-of-pocket healthcare expenditure in a sample of the population in Erbil, Iraq.

Methods We conducted this cross-sectional study in Erbil, Kurdistan Region of Iraq, from October to December 2023. A convenience sample of 414 adults completed a self-administered online survey. The following data were collected: recent illness, sociodemographic characteristics, type of healthcare received, and cost of healthcare.

Results The most common health conditions reported were communicable diseases (16.3%), musculoskeletal problems (13.1%), and noncommunicable diseases (12.7%). Approximately 85% of patients with health conditions requiring care sought healthcare; most visited private clinics (46.3%) and private hospitals (18.6%). The median total out-of-pocket healthcare expenditure in US dollars was 117.3 (interquartile range (IQR)=45.6–410.0). The median total cost was much greater for participants who first visited a private health facility (USD 135.5, IQR= 57.3–405.6) than those who first visited a public facility (USD 76.8, IQR= 16.1–459.7). Participants ≥ 60 years spent significantly more than those < 14 years (USD 332, 95% CI= 211–453, $p < 0.001$). Evermarried participants spent significantly more than unmarried (USD 97, 95% CI= 1 to 192, $p = 0.047$). Health expenditures were significantly greater for noncommunicable diseases than infectious diseases (USD 232, 95% CI= 96–368, $p = 0.001$). After adjusting for covariates, age ≥ 60 years was independently associated with higher spending (USD 305, 95% CI= 153–457, $p < 0.001$).

Conclusions Most participants sought care from formal health services, preferring the private sector. Seeking care from private facilities incurred significantly higher costs than seeking care from public ones, which suggests potential barriers to accessing healthcare, particularly affordability. The findings underscore the importance of evaluating existing healthcare policies to enhance effectiveness and identify areas for improvement. This study can help policymakers and healthcare providers design effective interventions, allocate resources efficiently, and improve healthcare delivery.

Keywords Expenditure, Health, Preference, Private sector, Public sector

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Background

Health-seeking behavior

Healthcare-seeking behavior involves any action taken by people facing health problems to find an appropriate remedy and promote good health. The patterns of healthcare-seeking behavior include how people interact with healthcare systems through different activities, such as identifying symptoms, selecting healthcare providers, and adhering to treatment plans [1, 2]. Many factors, such as sociodemographic, economic, and cultural characteristics, geographic location, and specific beliefs and perceptions, can affect people's patterns of healthcare-seeking behavior [3, 4].

Determining common trends, preferences, and determinants affecting healthcare decision-making helps determine possible barriers to accessing healthcare. More effective and inclusive healthcare systems that address people's diverse health needs could be developed [5, 6]. Healthcare providers, policymakers, and public health professionals can greatly benefit from this knowledge when developing tailored interventions and focused healthcare strategies to improve healthcare delivery and foster better health outcomes [5, 7].

Health expenditures

The financial aspects of healthcare consumption are reflected in health expenditures, which include indirect expenses associated with lost production and transportation, as well as direct costs for hospital stays, prescription drugs, and physician consultations [8]. In most situations, the financial burden of people from healthcare services is significant [9]. Costs are common deterrents for people seeking medical care, especially those with low incomes [10]. The primary source of financial obstacles to receiving medical treatment is private (out-of-pocket) expenses. Individuals from more affluent homes are more likely to seek care than those from poorer households. In addition, they spend much of their monthly household budget on health care [9].

Assessing health expenditures helps provide valuable information on the financial dynamics of healthcare systems and their impact on individuals, families, and societies. Examining health expenditures helps us understand the economic burden of diseases, healthcare access disparities, and the efficiency of healthcare delivery systems [11]. It can also contribute to informed policymaking by providing evidence on resource allocation, the effectiveness of healthcare interventions, and the financial implications of public health initiatives [12].

Study rationale

In Iraq, health services are provided by both the public and private health sectors. Health services are provided at very low prices through a network of primary health

centers and public hospitals in the public sector. The private health sector includes private physician clinics, hospitals, and pharmacies. Since there are no health insurance plans in Iraq, private health care is paid out of pocket [13].

There is limited research on healthcare-seeking behavior and associated costs in Iraq. Previous studies in Iraq have focused primarily on healthcare-seeking behavior among internally displaced people living in camps [13]. These limited studies have shown a general preference for using costly private health facilities over almost free public facilities [13–15]. Iraq is at a crucial moment in addressing the complexities of its health system. The historical challenges and recent socioeconomic changes experienced by Iraq make exploring healthcare-seeking behavior and health expenditure an essential step for an in-depth understanding of the dynamics of healthcare utilization [16]. Like other countries in the Middle East, Iraq continues to experience demographic changes, urbanization, economic changes, and rapid privatization of the health sector [17]. It is important to explore these factors to design healthcare policies that align with the growing needs of the population. Therefore, this study aimed to assess healthcare-seeking behavior and health expenditures in a sample of the population in Erbil, Iraq. The specific research questions included the types of healthcare services individuals seek when they fall ill, the costs associated with different components of healthcare, and the factors associated with the cost of healthcare services.

Methods

Design and setting

This cross-sectional study was conducted in Erbil, Kurdistan Region of Iraq, from October to December 2023. The survey was based on a self-administered online survey using Google Forms.

Participants

The sample size for this study was calculated using Epi-info, using an estimated prevalence of household members who need care of 33.9% [13] with a confidence interval of 95% and $\pm 5\%$ precision. Thus, a sample size of 344 individuals was calculated, which was increased to 500 to account for nonresponse.

For this study, a convenience sample of the adult population from the Erbil governorate was recruited. A primary list of the study population from the Erbil governorate was prepared with the support of several key informants from the community.

Study tool

The questionnaire used for data collection included two sections.

Health-seeking behavior section

The first section included information on whether any household member felt ill or needed care in the previous month. Those who answered yes were asked if they had received care. Otherwise, they were asked about the reason for not receiving care. Those who received care were asked where they received it. They were also asked if they had received care at a second facility and were asked to name the type of facility. Information was also collected on the sociodemographic characteristics of the patient and the household.

Health expenditures section

The second section included information on the cost of care for the most recent illness, including the cost of consultation, medications, laboratory, radiology, medical/surgical procedures, and the total cost. The cost was obtained for Iraqi dinars, which were converted to USD for reporting using the average market exchange rate during the study period (1 USD=1550 Iraqi dinars).

Data collection

The online Google form was shared with the participants through social media, WhatsApp groups, and email. It began with a description of the study and its significance. Participants were asked to provide informed consent before completing the form.

Ethical aspects

Participants provided written informed consent online after being informed that participation was voluntary and anonymity was guaranteed. The Research Ethics Committee of the Catholic University in Erbil approved the study protocol.

Data processing and statistical analysis

The data were analyzed using the Statistical Package for the Social Sciences (version 22). Means, medians, and frequencies were used to display the findings. For continuous variables, the cost of care is presented as the median and interquartile range (IQR) or mean and standard deviation (SD) according to the normality of the data. The costs of different services (consultation, medications, laboratory, radiology, and medical and surgical procedures), different types of facilities used (public vs. private), and total costs are presented as the means (standard errors) or medians (interquartile ranges). We performed simple and multiple quartile (median) regression analyses to examine the variables associated with the total cost. Thus, the contribution of the independent variables (age group, sex, education level, employment, area of residence, economic level, duration and type of disease, and type of facility used) to the total cost was evaluated by simple and multivariate median regression.

A *p*-value less than 0.05 was considered to indicate statistical significance.

Results

Health-seeking behavior

Of the 414 household respondents, 221 (53.4%) had at least one member of the family who had a health condition that required medical care in the month preceding the survey. The mean age of the 221 patients was 39.3 ± 20.8 years. Among them, 34.4% were aged 40 to 59 years, 62% were women, 62% were married, 38% had a college education or higher, 36.2% were employed, 78.3% had an average economic condition, and 55.7% lived in the main cities (Table 1).

The most prevalent health conditions reported were infectious or communicable diseases (16.3%), followed by musculoskeletal problems (13.1%), noncommunicable diseases (12.7%), kidney or urinary tract problems (11.8%) and gastrointestinal problems (8.6%). Of the 221 patients with a health condition requiring care, 188 (85.1%) sought healthcare, and 33 (14.9%) did not seek healthcare for different reasons. Of the 188 patients who received health care, most visited private clinics (46.3%), followed by private hospitals (18.6%) and public hospitals (17%). Approximately 49% ($n=92$) of the participants visited a health facility for the second time for the same disease, mostly private clinics (53.1%) and private hospitals (21.9%), as shown in Table 2.

Health expenditures

The median total cost of healthcare in US dollars was 117.3 (interquartile range (IQR)=45.6–410.0), including 16.1 (IQR=9.7–16.1) for consultation, 45.2 (IQR=19.4–80.6) for medications, 32.3 (IQR=16.1–64.5) for laboratory, 32.3 (IQR=12.9–64.5) for radiology, and 387.1 (IQR=121.0–967.7) for procedures. The median total cost was much greater for participants who first visited a private health facility (USD 135.5, IQR=57.3–405.6) than those who first visited a public facility (USD 76.8, IQR=16.1–459.7). Table 3 shows the details of the mean and median healthcare costs for different services according to the type of health facility used.

The median regression analysis of the cost of care is shown in Table 4. Participants ≥ 60 years spent a significantly greater amount of money than those < 14 years (USD 332, 95% CI=211–453, $p < 0.001$). Evermarried participants spent significantly more than unmarried (USD 97, 95% CI=1–192, $p = 0.047$). The amount of money spent was greater among females than males, those with no education than those with education, not employed than employed, below average economic status than above average, urban area residents than semiurban and rural residents, but these differences were not statistically significant. Regarding the nature of the disease, health

Table 1 Sociodemographic details of the patients who required health care ($n=221$)

Characteristic	No.	(%)
Age (years)		
≤ 14	31	(14.0)
15–39	71	(32.1)
40–59	76	(34.4)
≥ 60	43	(19.5)
Gender		
Male	84	(38.0)
Female	137	(62.0)
Marital status		
Unmarried	73	(33.0)
Married	137	(62.0)
Widow/Divorced	11	(5.0)
Education level		
None	52	(23.5)
Primary school	36	(16.3)
Secondary school	49	(22.2)
College and over	84	(38.0)
Employment		
Employed	80.0	(36.2)
Not employed	30.0	(13.6)
Housewife	50.0	(22.6)
Retired	21.0	(9.5)
Student	40.0	(18.1)
Economic level		
Below average	22	(10.0)
Average	173	(78.3)
Above average	26	(11.8)
Area of residence		
Main urban	123	(55.7)
Semiurban or rural	98	(44.3)
Total	221	(100.0)

expenditures were greater for noncommunicable diseases than infectious diseases (USD 232, 95% CI=96–368, $p=0.001$). There was no significant association between the disease duration and health expenditures. After adjusting for covariates, age ≥ 60 years was independently associated with higher spending (USD 305, 95% CI=153–457, $p<0.001$).

Discussion

Health-seeking behavior

Understanding health-seeking behavior is crucial for healthcare systems. This study can help policymakers and healthcare providers design effective interventions, allocate resources efficiently, and improve overall healthcare delivery. Therefore, this study aimed to assess health-seeking behavior and health expenditure in a population sample in Erbil, Iraq.

The present study showed that most participants sought care from health facilities. Other studies have shown similar findings; for example, Musoke et al. reported that most (65%) of the participants visited

health facilities for treatment [10]. Although many public health facilities provide healthcare at different levels of primary health care centers and hospitals with lower costs, many participants have sought to access the private sector for their health issues. This represents a prevalent behavior among those seeking care in the Kurdistan region of Iraq. Healthcare authorities and policymakers must consider this issue and explore the needs and values of patients not met in the public health sector.

Similarly, a previous study conducted by Cetorelli et al. among Yazidis and other minorities who resided in camps in the Kurdistan region of Iraq revealed that most of the care was obtained from private clinics [13]. Another study from the Kurdistan Region of Iraq showed that public primary health care centers are primarily used for preventive purposes, and the main barrier to utilizing and visiting these centers is inadequate services [18]. Another study conducted in rural areas in North India reported that among patients who received healthcare, the majority (approximately 65%) sought the private

Table 2 Prevalence of health conditions reported by participants in the month preceding the survey and details of healthcare-seeking behavior

Variable	No.	(%)
Health condition (n = 221)		
Infection or communicable disease	36	(16.3)
Musculoskeletal problem	29	(13.1)
Noncommunicable disease	28	(12.7)
Kidney or urinary tract problem	26	(11.8)
Gastrointestinal/diarrhea	19	(8.6)
Obstetric/gynecological problem, and antenatal care	12	(5.4)
Respiratory disease	12	(5.4)
Cardiovascular disease	9	(4.1)
Eye problem	7	(3.2)
Skin problem	6	(2.7)
Fever	6	(2.7)
Cancer	6	(2.7)
Dental care	3	(1.4)
Emotional or mental health	3	(1.4)
Ear problem	3	(1.4)
Endocrine problem	3	(1.4)
Other	13	(5.9)
Reasons for not receiving health care (n = 33)		
Could not afford the cost	5	(15.2)
Family decided that care should not be sought	5	(15.2)
No medical facilities nearby	5	(15.2)
No time to go to a health facility	5	(15.2)
Inadequate provider equipment or drugs	3	(9.1)
Poor services	2	(6.1)
Long waiting time	1	(3.0)
Transportation difficulties	1	(3.0)
Other	6	(18.2)
Health facilities visited the first time (n = 188)		
Primary health care center	14	(7.4)
Private clinic	87	(46.3)
Public hospital	32	(17.0)
Private hospital	35	(18.6)
Private pharmacy	10	(5.3)
Medical assistant clinic	4	(2.1)
Others (e.g., traditional healer/alternative medicine)	6	(3.2)
Received healthcare for the second time		
Yes	96	(51.1)
No	92	(48.9)
Health facilities visited the second time (n = 96)		
Primary health care center	3	(3.1)
Private clinic	51	(53.1)
Public hospital	11	(11.5)
Private hospital	21	(21.9)
Private pharmacy	4	(4.2)
Others (e.g., traditional healer/alternative medicine)	6	(6.3)

sector, including private clinics and hospitals, and only 17% received care from public hospitals [19].

Contrasting findings were observed in another study since 61.9% of the participants preferred the public health sector over the private sector, as healthcare costs

were more reasonable and most participants had government insurance [6]. In addition, other contradictory findings were observed in another study, as a substantial number of patients (49.1%) sought care from public health facilities for diseases thought to be mild. However,

Table 3 Details of the mean and median healthcare costs (in USD) for different services according to the type of health facility used

Type of facility	Cost USD						
	No.	(%)	Median	IQR	Mean	SD	
Public facilities							
Consultation	46	(100.0)	9.7	1.7	16.9	19.7	29.3
Medication	42	(91.3)	32.3	9.7	94.4	82.7	144.6
Lab	32	(69.6)	25.8	10.5	64.5	61.7	75.7
Radiology	23	(50.0)	29.0	9.7	90.3	62.9	78.5
Procedures	14	(30.4)	274.2	93.5	516.1	402.8	416.4
Total	46	(24.5)	76.8	16.1	459.7	292.1	488.2
Private facilities							
Consultation	142	(100.0)	16.1	9.7	16.3	32.1	48.7
Medication	138	(97.2)	46.8	22.6	80.6	82.7	135.8
Lab	100	(70.4)	32.3	16.1	58.1	62.4	145.4
Radiology	74	(52.1)	32.3	12.9	64.5	55.7	86.9
Procedures	40	(28.2)	451.6	129.0	967.7	687.0	705.9
Total	142	(75.5)	135.5	57.3	405.6	379.0	634.9
Total (both types of facilities)							
Consultation	188	(100.0)	16.1	9.7	16.1	29.1	3.3
Medication	180	(95.7)	45.2	19.4	80.6	82.7	10.2
Lab	132	(70.2)	32.3	16.1	64.5	62.2	11.5
Radiology	97	(51.6)	32.3	12.9	64.5	57.4	8.6
Procedures	54	(28.7)	387.1	121.0	967.7	613.3	88.7
Total	188	(100.0)	117.3	45.6	410.5	357.8	43.9

IQR: Interquartile range; SD: Standard deviation

80.14% of the patients also visited private health facilities for chronic illnesses and illnesses of perceived high severity [20]. Furthermore, another study revealed that almost 84% of patients preferred to visit public hospitals due to the lack of laboratory tests and medications [21].

In the current study, the reasons for not seeking medical facilities were mainly cost affordability and a lack of nearby medical facilities. This finding agrees with another study, which reported that the high cost of services and the long distance from health facilities were the most common challenges experienced by participants [10].

Physical, economic, political, and cultural issues influence how people seek health care [6, 22, 23]. Health-seeking behavior in the Kurdistan region of Iraq is also influenced by a combination of cultural, social, economic, and political factors. Decades of conflict and political instability have impacted the region's healthcare infrastructure. Access to healthcare services can be uneven, influencing how and when people seek healthcare.

Social influences, including family and community norms, can encourage or discourage seeking healthcare. The Iraq region has rich cultural and traditional beliefs that often influence health-seeking behavior, and the Kurdistan region of Iraq is no exception. Traditional healing practices and reliance on family and community networks may influence individuals' decisions to seek formal healthcare. However, the current study revealed that only 3.2% of the patients who sought medical attention visited traditional healers. This could be because

most participants were college-level or higher educated; most sought healthcare to treat infections or communicable diseases. Other studies reported a greater proportion of patients seeking care from traditional healers, such as Fatma and Ramamohan, who reported that 10.2% of patients sought care from traditional healers [20].

Geographical factors and infrastructure issues play important roles in determining access to and utilization of healthcare resources and may generate barriers to accessing healthcare services, especially in rural areas. Disparities in healthcare infrastructure between urban and rural regions can influence health-seeking patterns [24]. In the present study, the lack of nearby medical facilities, transportation difficulties, inadequate provider equipment or drugs, poor service, and long waiting times were reasons for not seeking medical care. Similarly, another study reported that poor road quality and drug shortages significantly hampered health services [25].

Health expenditures

In the current study, the median total cost of healthcare was USD 117.3. On average, Iraqis spend 6.5% of their total household income on health services, with Kurdistan residents spending 7–9% of their income [16]. Another study from the Kurdistan region of Iraq showed significantly lower mean costs (USD 1.6 at the primary health care centers, USD 4.4 at public hospitals, and USD 17.3 at private clinics). However, displaced people in camps that depend primarily on the nearly free camp

Table 4 Multiple median regression analysis of factors associated with cost of care (n = 188)

Variable	Unadjusted coefficient	95% CI	P value	Adjusted coefficient	95% CI	P value		
Age								
≥60	332	211	453	<0.001	305	153	457	<0.001
40–59	66	-43	176	0.234	19	-125	163	0.795
15–39	39	-72	149	0.491	-21	-160	117	0.760
<14	Reference							
Gender								
Female	42	-59	143	0.415	27	-52	106	0.494
Male	Reference							
Education								
College	-28	-148	93	0.651	68	-56	191	0.281
Secondary	-76	-212	60	0.271	50	-70	171	0.411
Primary	-32	-177	112	0.660	82	-26	190	0.136
None	Reference							
Marital status								
Ever married	97	1	192	0.047	-20	-128	88	0.715
Unmarried	Reference							
Employment								
Student	-100	-229	29	0.128	-100	-227	26	0.119
Employed	-2	-104	100	0.970	-24	-120	73	0.626
Not employed	Reference							
Economic status								
Below average	18	-205	241	0.875	19	-124	163	0.791
Average	-5	-160	150	0.951	10	-91	110	0.850
Above average	Reference							
Area of residence								
Semiurban or rural	-42	-137	53	0.383	31	-42	105	0.400
Main urban	Reference							
Duration of health condition								
Chronic long-term condition	64	-29	157	0.179	-41	-133	52	0.385
Acute short-term condition	Reference							
Type of health condition								
Obstetric/gynecological problems	115	-77	308	0.238	71	-110	251	0.440
Noncommunicable diseases	232	96	368	0.001	97	-53	247	0.202
Gastrointestinal diseases	64	-102	230	0.448	97	-49	244	0.191
Kidney or urinary tract problem	115	-36	267	0.134	78	-62	217	0.274
Respiratory and cardiovascular diseases	39	-130	208	0.652	60	-90	210	0.432
Musculoskeletal problem	106	-42	254	0.160	54	-83	192	0.435
Eye, ear, and skin problems	64	-105	233	0.457	63	-74	200	0.363
Other	164	-9	337	0.063	85	-58	228	0.240

Table 4 (continued)

Variable	Unadjusted coefficient	95% CI	P value	Adjusted coefficient	95% CI	P value
Infection or communicable disease	Reference			Reference		
Place of care						
Private	71	-40	0.207	72	156	0.091
Public	Reference			Reference		

CI: Confidence interval

health facilities and private facilities outside the main cities have been evaluated [13]. In the present study, out-of-pocket expenditures were exceptionally high for medications and procedures, as these services are mainly obtained from the private sector due to unavailability, poor quality, and long waiting times in the public sector, and higher satisfaction, better-perceived quality; and greater preference for the private sector [26, 27].

In the current study, those seeking care in the private sector spent much more money than those in the public sector. The private sector in Iraq is entirely dependent on out-of-pocket payments due to the lack of private health insurance coverage [28]. Healthcare in the public sector is nearly free since there are only nominal fees. However, the study participants who sought care in the public sector still spent an important amount of money. This is because they need to purchase medications or perform laboratory tests in the private sector [29], and sometimes they need to go for another consultation in the private sector if they do not recover or are not satisfied with the services in public facilities due to poor or unavailability of services [16, 30].

In the present study, those ≥ 60 were significantly associated with higher health expenditures. Age ≥ 60 was also the only factor independently associated with higher health expenditures. Older people are more prone to diseases, particularly noncommunicable diseases, and have more health needs. Medications for noncommunicable diseases are limited in public health facilities, and many need to buy them regularly from private pharmacies. Therefore, significantly higher spending is expected among this group [31].

Research has shown that marriage provides health benefits, and married people enjoy better physical and mental health than unmarried [32]. In the present study, univariate median regression showed that ever-married participants spent significantly more on health than unmarried. Another study from Spain also revealed that the median health expenditure of married individuals aged below 40 years was larger than that of unmarried individuals in the same age range. However, unmarried individuals spend more than married ones at older ages [33].

Women have higher utilization of healthcare services and higher associated expenditures than men [34]. In the present study, the health expenditures were higher among females than males but not statistically significant. Another study revealed that the total spending was greater in females than males for most health services, and the gender difference in total spending was most pronounced in older adults due to the longer life expectancy of women [35].

In the present study, participants with no education had greater health expenditures than those with

education, but this association was not statistically significant. Another study also revealed that participants with lower educational levels had higher healthcare expenditures and used more healthcare than those with the highest educational level. However, the association was also insignificant after adjusting for confounding factors [36].

Economic challenges can hinder access to healthcare. High out-of-pocket expenses and economic disparities may affect individuals' ability to seek timely and appropriate healthcare. However, the current study did not reveal a significant association between economic or employment status and the amount of healthcare expenditure. This finding disagrees with the findings of another study, where higher income contributed to higher out-of-pocket expenditures [6]. In contrast, another study revealed higher healthcare expenditures among participants with lower incomes than those with higher incomes [36]. Such discrepancies in the association of health expenditure with economic level might be related to the type of health system and the possibility of different groups using more or less healthcare. Moreover, our findings might indicate that people with lower economic conditions also spend significantly on healthcare due to private sector preferences or poor public health sector services [14, 16].

In the present study, the univariate median regression showed significantly high health expenditures for non-communicable diseases. Research has shown that the prevalence of catastrophic spending and impoverishment is very high among households with noncommunicable diseases, especially in middle-income countries [37]. A study from India showed a higher burden of out-of-pocket expenditure on households affected by noncommunicable diseases, with the mean expenditure by households with noncommunicable diseases being more than twice as much as households with no noncommunicable diseases. The proportion of total medical expenditure incurred on medicines and diagnostics is particularly troublesome for households with noncommunicable diseases [38].

The present study did not show a significant association between disease duration and health expenditures. This could be because this study collected information on the health expenditures related to the most recent illness within the last month that required care. Thus, the total health expenditure of a disease that required care multiple times during the year was not recorded.

Strengths and limitations

To our knowledge, this study is the first to provide evidence of healthcare utilization patterns and health-seeking behaviors in a sample of the Kurdistan region of the Iraqi population. The findings provide valuable information on health-seeking behavior, relevant expenditures,

and difficulties using medical facilities. Therefore, by analyzing the patterns of seeking care and identifying access barriers, healthcare authorities and policymakers in the Kurdistan region of Iraq can tailor strategies to better meet the needs of their community, ultimately leading to improved health outcomes.

This study also lays the foundation for more in-depth and rigorous research in this field. As a crucial component of the comprehensive healthcare system, researchers, or more importantly, health authorities in the Kurdistan region of Iraq, must conduct systematic nationwide comprehensive studies to gather data on the population's health needs, health expenditures, and health-seeking behaviors. This approach will help to build an effective healthcare system in the region.

It is worth mentioning that this study has some limitations. The cross-sectional virtual survey design used in the current study might restrict the generalizability of the study findings to the entire population. First, the data collected were from individuals residing in one governorate of the Kurdistan region of Iraq. Second, only the health-seeking behaviors of those with Internet access were captured during the data collection period. This study only assessed the medical expenditures, and the non-medical expenditures were not investigated. The non-medical expenditures and opportunity costs related to managing and living with diseases, especially chronic diseases and diseases of long duration, cause an important economic burden for households. The present study only assessed the health expenditure related to the most recent illness episode and the last care sought. Therefore, the variation in the expenditure related to the duration of illness could not be assessed correctly, particularly for long-term diseases that require continuous care and multiple visits to healthcare facilities. Future studies should include more detailed data about the nature and duration of the studied health conditions to have a better understating of the exact healthcare expenditures according to these variables.

Conclusions

Most participants sought care from formal health services, with a preference for the private sector. Seeking care from private facilities incurred significantly higher costs when compared to public ones. This suggests potential barriers to accessing healthcare, particularly in terms of affordability. The findings underscore the importance of evaluating existing healthcare policies to enhance effectiveness and identify areas for improvement. This study can help policymakers and healthcare providers design effective interventions, allocate resources efficiently, and improve overall healthcare delivery. Further studies need to explore the reasons for private sector preference, even if this involves high

out-of-pocket costs. It is also essential to understand why visiting public health facilities involves relatively high costs when it should be nearly free.

Abbreviations

IQR Interquartile range

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Author contributions

NPS, KIM, and KMMA conceived and designed the study. KAM, KMMA, KIM, and AMS contributed to data collection. NPA and AMS analyzed and interpreted the data. NPS, KIM, KAM, KMMA, and AMS contributed to drafting the manuscript and comprehensively reviewed and revised it. All authors read and approved the final manuscript.

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Data availability

The dataset used for the current study is available in the Mendeley dataset repository (<https://doi.org/10.17632/5tt7kw7vh7.1>).

Declarations

Ethics approval and consent to participate

The Research Ethics Committee of Catholic University in Erbil approved this study. Written informed consent was obtained from the participants before participation in the study. All methods were carried out following relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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