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Original Article

Evaluation of health system in Iraq from people's point of view: a comparative study of two different eras

Saad Ahmed Ali Jadoo[1*], Adil H. Alhusseiny[2], Shukur Mahmood Yaseen[3], Mustafa Ali Mustafa Al-Samarrai[4], Anmar Shukur Mahmood[5]

Abstract

Background: Since the 2003 United States–British coalition military invasion, Iraq has been in a state of continuous deterioration at all levels, including the health sector. This study aimed to elicit the viewpoints of the Iraqi people on the current health system, focusing on many provided health services and assessing whether the public prefers the current health system or that was provided before the invasion.

Methods: A cross-sectional survey designed to explore the Iraqi people's opinions on their health system. A self-administered questionnaire using a multi-stage sampling technique was distributed in five geographical regions in Iraq to collect the data from the head of household between 1st October and 31st of December 2019. Multiple logistic regressions were recruited to determine the significant contributing variables in this study.

Results: A total of 365 heads of households (response rate: 86.1%) with the mean age of 48.36 + 11.92 years (ranged 35-78) included in the study. Most of the respondents (61.4%) complained of healthcare inaccessibility, 59.7% believed that health resources were not available, 53.7% claimed a deterioration in the quality of care, and 62.2% believed that the political / media position did not contribute to positive changes during the past two decades. Indeed, most respondents (66.0%) believe that the current healthcare system is worse than before. In the multivariate analysis, there was a statistically significant relationship between the characteristics and opinions of the respondents. Old age group (p = 0.003), men (p = < 0.001), married (p = 0.001), low educated (p = < 0.001), rural resident (p = < 0.001), unemployed (p = 0.003), monthly income of less than USD 400 (p = < 0.001), consider themselves to be unhealthy (p = 0.001), and those who think that people are unhappy now than two decades ago (p = 0.012) have a more negative opinion of the health system.

Conclusion: Most Iraqis surveyed expressed disappointment from the health system after the 2003 United States–British Coalition military invasion. The current health system is faltering at all levels and does not meet the citizens' basic needs. Health Transformation Program (HTP) has become inevitable to develop an accessible, affordable, high-quality, efficient, and effective health system.

Keywords: Health System, Reform, Point of View, People, Two Decades, Invasion, Iraq

Background

Iraq is a member of the United Nations (UN), the Non-Aligned Movement (NAM), the Organization of the Petroleum Exporting Countries (OPEC), the World Trade Organization (WTO), and several other regional and international organizations. Moreover, through a jointly agreed Individual Partnership and Cooperation Program (IPCP), the North Atlantic Treaty Organization (NATO) agreed to grant Iraq partner status in 2011 [1]. Historically and geographically, Iraq constitutes the most significant part of ancient Mesopotamia (the ancient historical region extending between the Tigris and Euphrates). Ancient Mesopotamia, part of the so-called Fertile Crescent, covers the regions between the Euphrates (East) and the Nile (West). Iraq is a well-known home of ancient and modern human civilizations such as Assyrian, Sumerian, Babylonian, Akkadian, and Islamic [2]. The Iraqi people in Mesopotamia are innovators and skilled makers of human civilization. They taught the humanity of the writing and were the first to convert the language of speech into letters and the first who established written legal code for humanity. Moreover, Iraqis were the first who invented the wheel in history, and the first electric battery was "Baghdad Battery" and agriculture, urban planning, foreign trade, astronomy, medicine, engineering, mathematics, and many other sciences [3].

*Correspondence: drsaadalezzi@gmail.com
[1]Department of Public Health, Faculty of Medicine, Bezmialem Vakif University, Istanbul, Turkey
A full list of author information is available at the end of the article

Modern Iraq

Among the First World War's outcomes was establishing the modern state of Iraq from three cities (Baghdad, Mosul, and Basra) that belonged to the Ottoman Empire until 1917 [4]. Several national governments succeeded in ruling Iraq under the monarchy and the republican systems until the 2003 US–British Coalition military invasion of Iraq. The discovery of petroleum at the beginning of the twenties of the last century contributed to the gradual improvement of the country's economic situation. However, the real prosperity of modern Iraq occurred in the 1970s when the government succeeded in using the vast resources of petroleum. Iraq reached a middle-income status in the 1970s with remarkable improvements in most major indicators such as healthcare, education, economic and human resource development [5]. However, Iraqis did not enjoy prosperity for long because of the successive wars; eight years' war between Iraq and Iran (1980-1988), invasion of Kuwait (1990-1991), UN sanctions (1991-2003), and the unjustified US–British Coalition military invasion in 2003 and the subsequent comprehensive, systematic, and the continuous destruction of the physical and moral infrastructures. Iraq lost the concept of the modern central state and turned into a state of decentralization in planning, management, and implementation. Iraq is now ruled by rival sectarian parties and militias fighting to overpower, but with a common goal of destroying the homeland, plundering its wealth, and impeding any effort to rebuild it [6].

Health system in Iraq

Historically, the health system in Iraq has been affected positively and negatively by the political and economic situation during the past five decades. Generally, Iraq has adopted a comprehensive, centralized, capital-based health system that provides free curative health services through a hospital-oriented model [7]. During the 1970s and early 1980s, which was "the golden period in modern Iraq", most essential health indicators have improved significantly compared to decades before. Just before 1991, the Iraqi government has allocated an annual budget of "USD 450 million to serve nearly 97.0% of the urban and 79.0% of the rural population through a central public healthcare network of 172 modern government hospitals, 1,200 primary healthcare centers, and 850 community health centers" [8]. Although the eight-year war was long and fierce, most healthcare-related infrastructure remains intact with remarkable development in the emergency wards and surgical units in terms of construction and performance. The health system was significantly collapsed due to the 13 years UN-imposed trade sanctions after the invasion of Kuwait and the Gulf war in 1991. Infrastructure and living facilities related to health and safe drinking water have been targeted. The most affected groups were children, mothers, and the chronically ill old age group. Most health indicators have declined sharply compared to a decade ago. The mortality rate of children under the age of five increased from 52 (in 1989) to 131 deaths per 1000 live births (in the mid-1990s) due to lack of medications related to a treatable communicable disease such as diarrhea and acute respiratory infections [6,8,9]. Eighteen years after the invasion of Iraq by two members of the Security Council (USA and UK) and without an international resolution, the consequences were dire and catastrophic at all levels. Several studies published over the past two decades have extensively discussed what is happening in Iraq.

Nevertheless, we can sum up the goals of the invasion of Iraq in bringing down the modern Iraqi state and replace it with sectarian parties and militias; destroying most of the Iraqi infrastructure and making it a target for systematic looting and sabotage; creating an environment for unprecedented administrative and financial corruption; tearing apart the societal fabric and pushing towards the sectarian tension and internal fighting, as it happened in the fabricated sectarian war in 2006 and allowing terrorist organizations to invade Iraq such as the Islamic State in Iraq and Syria (ISIS) when storming most of the central and western parts in mid-2014 [6,11-12]. Unfortunately, the health sector has had its share of destruction. Despite the billions of dollars allocated to restructure the health system, all international and local promises and efforts have not succeeded. Since 2016, the Iraqi official authorities have announced a remarkable development in the number of government and private hospitals and primary health centers, reaching 262,121,2669, respectively [13].

The announced statistics do not match what exists in reality, except in the prosperity of the private sector at the expense of the public sector. This study was designed to elicit the views of the Iraqi people on the current health system using opinion polls. The focus was on five domains, including "the accessibility of healthcare, availability of resources, quality of care, information by politicians and the media, and whether the public prefer the current health system or the one that was provided before the US–British Coalition military invasion in 2003".

Patients' satisfaction

Most of the previous national and international studies conducted to assess the health care system in Iraq did not consider the identification of people's thoughts and opinions about the direction of actual reforms in the health care system. The rate of satisfaction with health care services varied greatly across different regions of Iraq, which raises doubts about the validity in some studies and their results. Sa'adoon et al. [14] reported a low satisfaction rate towards the health care services at Thi-Qar province (south of Iraq). Qadir et al. [15] and his colleagues in Erbil province (North of Iraq) found that patients' satisfaction with health services provided in the private sector is higher than that provided in public sectors. Abd-Alsaid EM [16] found that overall satisfaction was 90.8% among 1,200 patients who attended 12 randomly selected primary health care centers in Basra (southern Iraq). Ali Jadoo et al.[10], found that patients attending outpatient clinics in Diyala and Salah ad-Din provinces showed a total satisfaction score of 61.5 ± 9.2 in seven subscales of PSQ-18 (General satisfaction, technical quality, interpersonal manner, communication, financial aspects, time spent with the doctor and accessibility and convenience). Habib et al. [17] found that 90.0% and 83.3% of the inpatients (medical ward) at Al-Kindy Teaching Hospital, Baghdad, are satisfied with physical care and nursing care, respectively was(83.3%). Thus, in our study, we aimed to shed light on the health system in Iraq by eliciting the people's opinion on the current health system and comparing it to that before 2003, focusing on many aspects of the health system using opinion polls.

Methods

Study population

A cross-sectional study is recruiting a self-administered questionnaire conducted among Iraqi heads of households between 1st October and 31st 2019. The multistage sampling technique was used to collect the data from five geographical regions in Iraq: north, west, south, east, and Baghdad city (the capital of Iraq). The respondents were contacted through a team of trained interviewers. Each eligible respondent received one copy of the questionnaire to explain the research conditions and objectives fully. The questionnaires were delivered over the weekend and collected again a week later.

Inclusion and exclusion criteria

All Iraqi citizens, both genders, used at least more than two types of health care services during the last 17 years, was at least 18 years old when US–British Coalition military invasion of Iraq in 2003 and willing to participate are included in the study. We excluded healthcare workers, health management personnel, politicians, media workers, mentally unstable, and those who were not willing to participate.

Sample size

According to the World Bank (WB) data for 2019, the total number of Iraqi people estimated to be 40,000,000 [18]. The sample size calculator arrived at 385 participants, using a margin of error of ± 5%, a confidence level of 95%, a 50% response distribution, and 40,000,000 people [19]. Non-response correction = 10%. Thus, the total sample size was (385+39) 424. Supervision during the data collection phase was ensured in all stages. Out of 424 distributed questionnaires, 365 completed questionnaires were used for analysis, making a response rate of 86.1%.

Questionnaire

A previously tested and valid questionnaire was employed in this study [20,21]. The questionnaire is composed of two sections. The first section included the sociodemographic variables such as age, gender, marital status, education, area of residency, happiness, health status, and occupation. For statistical analysis, we categorized some of the independent variables into two categories. The second section contained 17 items designed to assess people's opinions about the health system. Five aspects were measured: accessibility (five questions), availability of resources (three questions), quality of care (four questions), and opinion regarding the public attention paid to the healthcare reforms by politicians and mass media (three questions). Two questions asked for people's preferences about the old and the new health system and whether the Iraqi people preferred the current health system or that available a decade ago. Seventeen closed comparative statements scored on the five-point Likert-type scale giving a response ranging from (1) 'Strongly Agree' to (5) 'Strongly Disagree'. A reverse score has given each negatively worded question (1 = 5, 2 = 4, etc.). The researcher used an effective categorization to dichotomize participants' responses into two contextual groups: positive and negative opinions on each dimension and an overall scale. Therefore, for cross-tabulation and multiple logistic regression analysis, and to compare the people's opinion, dummy variables for (1) negative and (0) positive opinion were constructed and summed from the seventeen items as originally scored (1–5) (range 17–85). The decision was made to dichotomize the summary score based on a median split (cut-off point) into (1) for high or negative opinion toward the current health system and (0) for low or positive opinion toward the health reform process as two dependent variables.

Statistical analysis

Normality tests were done, and all the quantitative data were found to be normally distributed. Data collected were analyzed using Statistical Package for Social Science (SPSS) program version 16.0. Cross-tabulation (Chi-square test) was used for dichotomized characteristics of respondents and people's opinions. Multiple logistic regressions were performed to identify significant contributing factors for people's opinions in this study.

Results

Sociodemographic factors

The mean age of respondents was 48.36 ± 11.92 years (ranged 35 -78 years). The highest response rates at 51.8% were at the age of 45 years and above. Most of the respondents were males (59.5%), married (74.0%), low educated [60.0], urban residents (54.5%), employed (61.4%), feel unhappy (67.7%) with a monthly income of USD 400 and more (51.8%) and considered themselves as unhealthy (58.6%). Table 1 shows the demographic characteristics of the respondents.

Table 1 Frequency distribution of categorized sociodemographic variables of respondents (n = 365)

Variable	Category	N (%)
Age	>=45	189 (51.8)
	<45	176(48.2)
Gender	Male	217(59.5)
	Female	148(40.5)
Marital status	Unmarried	95(26.0)
	Married	270(74.0)
Education	High level	146(40.0)
	Low level	219(60.0)
Residency	Rural	166(45.5)
	Urban	199(54.5)
Employment	Unemployed	141(38.6)
	Employed	224(61.4)
Happiness	Unhappy	247(67.7)
	Happy	118(32.3)
Income	<$400	176(48.2)
	≥$400	189(51.8)
Health Status	Unhealthy	214(58.6)
	healthy	151(41.4)

Opinions on changes in healthcare

Most of the respondents (60.5%) have negative opinions when the current situation is compared with that two decades ago in terms of accessibility, availability of resources, quality of care, and the attitudes of politicians to healthcare. At the same time, 66.0% of respondents preferred their previous health status over the present. Table 2 shows the overall respondents' opinions by domains.

Table 2 Frequency distribution of respondents' opinion by five domains (n = 365)

Domains	Mean (SD)*	M*	Negative opinion N (%)	Positive opinion N (%)
Overall	47.73(8.29)	47	221(60.5)	144(39.5)
Accessibility	15.23(3.11)	15	224(61.4)	141(38.6)
Availability	7.45(2.79)	7	218(59.7)	147(40.3)
Quality	9.17(3.38)	9	196(53.7)	169(46.3)
Attitude	8.57(2.52)	9	227(62,2)	138(37.8)
Preference	7.42(2.08)	8	241(66.0)	124(34.0)

*SD: Standard Deviation, **M: Median

More than sixty percent (61.4%) agreed that accessibility has decreased due to the changes that took place after 2003. Respondents disagreed or strongly disagreed (70.7%) that healthcare is easier to get today when compared with that before the 2003 US–British Coalition military invasion. About 68.8% of the respondents declared that they have difficulty getting drugs and treatment; in addition, 66.0% of the respondents said that medical treatment is less accessible now for everybody when compared with that available two decades ago. Regarding the payments for medication, 70.4% believed that there is a higher payment when compared with that two decades ago, while 18.6 % of the respondents had a different opinion (with 11.0% undecided). When asked if they had to wait longer for medical treatment now when compared with that before the US-led invasion, 55.9% of the respondents agree or strongly agree, while 31.2% disagree or strongly disagree. Most of the respondents (59.7%) had negative opinions towards the availability of resources. The highest percent (68.0%) and (61.1%) thought that the number of available hospitals and doctors was not enough compared to before the US-led invasion of Iraq.

Moreover, the participants expressed different opinions about the availability of specialist doctors. One-third (32.7%) of them agreed or strongly disagreed on the availability of the specialist doctors; however, more than fifty (50.7%) disagreed or strongly disagreed compared to 16.7% who had hesitated to answer. More than half (53.7%) of the participants expressed a negative opinion about the quality of the medical services provided during the last two decades. The majority of respondents (70.7%) indicated that there had been no improvement in the quality of health services. The attitude of doctors and the information they provide to patients are essential elements of the quality of care. Unfortunately, the doctor-patient relationship was not good at about fifty percent (62.7%) and 58.4% considered information given by doctors these days are less than it was before the US-led invasion of Iraq. In addition, more than 60.9% of respondents believe that their doctor's office lacks much needed to provide complete care compared to the previous two decades. Concerning the opinion of Iraqi people about the politicians, the media, and the information provided, 62.2% had a negative impression. More than one-third (38.0%) agreed or strongly agreed with the statement that people feel more responsible for their health than it was two decades ago. More than half (56.9%) believed that they are less informed now than 27.4% who believed that they are better informed now (with 15.6% undecided). Also, most of the respondents (68.7%) believed that healthcare gets less attention from politicians now than 14.4% who expressed the opposite opinion. When asked if they prefer to go back to the healthcare system as it was two decades ago, the majority of respondents (69.9%) prefer the past healthcare system than the current, compared to 22.0% who would prefer to live in the current system (with 8.2% undecided). The population was also asked about the health insurance coverage; about two-thirds of the population (65.5%) stated that health insurance coverage is better than the past and current health system. Table 3 shows opinions on changes in health care (in %) by domains.

Opinions by socio-demographic factors

Multivariate logistic analysis indicated that there was a significant relationship between all nine factors and people's opinions (p-value < 0.05). The old age group (>=45 years) group (p = 0.003, prevalence odds ratio [POR] = 2.767, 95%CI 1.399-5.472), males, (p =< 0.001, [POR] = 6.436, 95%CI 2.765-14.983), married, (p = 0.001, [POR] = 3.792, 95%CI 1.669-8.617), have low education, (p =< 0.001, [POR] = 13.165, 95%CI 5.926-29.247), from rural region, (p =< 0.001, [POR] = 9.071, 95%CI 4.390-18.744), who believed that they are unhappier now than two decades ago, (p = 0.012, [POR] = 2.946, 95%CI 1.531-5.934), perceived themselves unhealthy, (p = 0.001, [POR] = 3.014, 95%CI 1.531-5.934), income level less than USD 400, (p =< 0.001, [POR] = 13.033, 95%CI 6.136-27.680), and unemployed, (p = 0.003, [POR] = 3.271, 95%CI 1.506-7.106) were significant. Upon controlling for confounders (Table 4), only respondents aged 45 years and above, males, married, have low education, from rural region, believed that they are unhappier now than two decades ago, perceived themselves as unhealthy, earned less than USD 400 monthly and were unemployed, significantly associated with negative people's opinion toward the current health system in Iraq.

Discussion

To our knowledge, this is the first study that brought out opinions of Iraqi people about the health system, using opinion polls. We employed a household-based survey, which aims to assess the satisfaction with five domains of healthcare: "accessibility, availability of resources, quality of care and public opinion regarding the attention paid to the healthcare reforms by politicians and mass media and measuring the preference" [20,21]. The importance of the survey does not lie in polling people's opinions about the current health care system only, but their opinion compares the current system to that passed about two decades ago (before 2003). Therefore, the outcomes of the study provide a comparison of the opinion of the general public about the system before and after the "US–British Coalition military invasion in 2003" and the claimed healthcare system reconstruction and measure the success (or failure) of the healthcare reconstruction from people's perspective. The overall respondents' opinion was negative (60.5%) when the current situation has compared with that before 2003. At the same time, 69.9% of them preferred the past healthcare system to the current. Moreover, 61.4% of the respondents emphasized the decreased accessibility of health services after 2003. In the 1990s, the Iraqi health system was crippled by the impact of the 1991 Gulf war and 13 years of unfair economic sanctions.

Table 3 Opinions on changes in health care (in %)

Statement	Strongly disagree	Disagree	N/K	Agree	Strongly agree
Accessibility					
Health care is easier to get as compared to before 2003.	35.6	35.1	19.2	5.8	4.4
Drugs and treatment are more difficult to get than before 2003.	8.8	12.1	10.4	35.6	33.2
You have to pay more for medical treatment compared with before 2003.	9.3	9.3	11.0	34.8	35.6
Medical treatment is more accessible now for everybody as compared with before 2003.	32.3	33.7	14.0	9.3	10.7
Patients have to wait longer for medical treatment now as compared with before 2003.	21.1	10.1	12.9	27.4	28.5
Availability of resources statements					
There are enough doctors in this area as compared to before 2003.	29.6	32.1	14.0	13.7	10.4
There are enough doctors in the area who specialize as compared to before 2003.	25.5	25.2	16.7	15.6	17.0
There are enough public hospitals in the area as compared to before 2003.	29.9	38.1	16.4	10.7	4.9
Quality statements					
The quality of care improved as compared to before 2003.	33.4	37.3	18.6	7.1	3.6
Doctors are much friendlier as compared to before 2003.	27.1	35.6	19.5	10.7	7.1
Doctors give you more information as compared to before 2003.	27.7	30.7	26.3	9.3	6.0
My doctor's office has everything needed to provide complete care as compared to before 2003.	32.1	28.8	17.3	14.5	7.4
Attitude statements					
People feel more responsible for their health as compared with before 2003.	17.0	17.3	27.7	16.4	21.6
The population is less informed about health risks and healthy behavior as compared with before 2003.	16.4	11.0	15.6	29.0	27.9
Health care gets more attention from politicians as compared with before 2003.	44.7	24.1	17.0	7.7	6.6
Preference statements					
I would like it when we could go back to the health care system as it was before 2003.	8.8	13.2	8.2	37.8	32.1
I prefer the current health system to the past health system before 2003.	12.1	7.9	14.5	28.2	37.3

Table 4 Association between sociodemographic factors and respondents' opinion (n = 365)

Variables	Negative opinion	Positive opinion	B	S.E.	Wald	P-value**	Exp(B) [POR]*	95.0% C.I for EXP(B)	
	N (%)	N (%)						Lower	Upper
Age									
>=45	105 (55.6)	84 (44.4)	1.018	0.348	8.557	0.003	2.767	1.399	5.472
<45	116 (65.9)	60 (34.1)	Reference						
Gender									
Male	116 (53.5)	101 (46.5)	1.862	0.431	18.651	0.000	6.436	2.765	14.983
Female	105 (70.9)	43 (29.1)	Reference						
Marital status									
Married	185 (68.5)	85 (31.5)	1.333	0.419	10.132	0.001	3.792	1.669	8.617
Unmarried	36 (37.9)	59 (62.1)	Reference						
Education level									
Low	100 (45.7)	119 (54.3)	2.578	0.407	40.052	0.000	13.165	5.926	29.247
High	121 (82.9)	25 (17.1)	Reference						
Residency									
Rural	139 (83.7)	27 (16.3)	2.205	0.370	35.457	0.000	9.071	4.390	18.744
Urban	82 (41.2)	117 (58.8)	Reference						
Employment									
Unemployed	96 (68.1)	45 (31.9)	1.185	0.396	8.966	0.003	3.271	1.506	7.106
Employed	125 (55.8)	99 (44.2)	Reference						
Happiness									
Unhappy	169 (68.4)	78 (31.6)	1.080	0.430	6.323	0.012	2.946	1.269	6.837
Happy	52 (44.1)	66 (55.9)	Reference						
Income level									
<USD 400	84 (47.7)	92 (52.3)	2.567	0.384	44.630	0.000	13.033	6.136	27.680
>=USD400	137 (72.5)	52 (27.5)	Reference						
Health status									
Unhealthy	144 (67.3)	70 (32.7)	1.103	0.346	10.197	0.001	3.014	1.531	5.934
Healthy	77 (51.0)	74 (49.0)							

*[POR] prevalence odd ratio, ** p-value significant at < 0.05.

Many hospitals and health care centers were out of service, accompanied by severe shortages in the supply of medications and human resources of health. At the time, the Iraqi government was struggling to maintain minimum standards of access and quality of health care, but it was difficult to stop the escalating decline in medical services due to the sharp decline in medical professionals and funding [22].

Prior to the 2003 invasion, among the coalition's stated goals was to save the Iraqi people and initiate health system reform responsive to patients' need. However, the adopted health system reform process lacked radical, long-term solutions, but, contrary to expectations, the coalition forces (US-UK) maintained the centralization of the health system represented by the Ministry of Health and its directorate in each governorate, with massive financial allocations and a fragile infrastructure [23]. The results were disappointing for the Iraqis. More than 60% were denied access to referral services due to unfair distribution of public hospitals and primary health centers and continuing deterioration in most social determinants of health [23,24]. Several international and local reports unanimously agreed that the 2003 invasion of Iraq, and the internal wars, and the subsequent destructions of health services significantly contributed to depriving millions of people, including refugees and internally displaced persons, from accessing health care services [25-29].

In our study, when we asked people's opinions about the availability of health resources, we observed that 61.7% and 67.0% believed that the number of doctors and hospitals is currently insufficient compared to about two decades ago, respectively. In fact, the officially announced numerical figures for hospitals and primary healthcare institutions have increased compared to pre-2003. However, the Ministry of Health has not received any government hospital completed since the mid-1980s [30].

Regardless of the enormous number (2996) of primary health centers announced in the Ministry of Health statistics for the year 2016, compared to "1,200 primary healthcare centers, and 850 community health centers" were pre-2003, WHO reported 2331 PHC in 2006 and about "half (1146) of them headed by mid-level workers" [31]. Shabila et al. [32] discussed the reality of primary health care centers in Erbil province (Northern of Iraq) with a sample of healthcare providers. The authors summarized the health care providers 'view that primary healthcare centers (PHCC) suffer from poor infrastructure, including hygiene, quality of medical supplies, information technology, and leadership/governance. The overcrowding in PHCC (especially in the early morning hours) due to an ineffective referral system has led to the overuse of services and medicines. The action to compensate for the deficit in the number of doctors was to raise the number of medical schools from just seven before 2003 to exceed 22 schools in 2021 [6,33].

Consequently, the number of working doctors per 10,000 reached 7 in 2018, coming from 5.0 in 2002 [World Bank] [34]. However, the outcomes were a surplus of graduated doctors because of the lack of prior planning to provide the place and budget for their employment [6]. Moreover, the hospital-based care system and misdistribution of health resources among the regions left many health centers empty of doctors, especially in remote or conflict areas, while some centers in large cities suffocate with medical personnel [31]. The private sector has become a haven for those who have not received employment, while immigration continued as the primary option for most health care providers [6,35,36]. In our study that 45.5% of the participants were from the rural regions, where there was the lowest proportion of doctors and specialists compared with the urban regions, may partly explain our findings.

The deliberate bombing of health institutions during the 2003 invasion and the subsequent systematic looting of health facilities resulted in heavy equipment and pharmaceutical stocks losses. About 53.7% of the participants expressed a negative view of the quality of health services. The 2003 report of the World Health Organization and UNICEF indicated that the financial allocations for the provision of medicines and medical equipment are not commensurate with the allocations granted to enhance the income of medical personnel and increase training opportunities, which negatively affected the quality of health service [37]. However, according to the 2011 Iraq Knowledge Network (IKN) survey, nearly 40 percent of the surveyed population believed that the quality of healthcare services in their area was poor [38]. The quality of health care in Iraq continued to deteriorate, and the shortage became widespread, prompting increasingly many Iraqi patients to seek health care abroad, such as Turkey, Lebanon, and India [25, 32].

The health system is one of the most prominent topics on the table of the ruling political class and the media alike. Usually, the Iraqi citizen's problems are discussed with the nearness of any parliamentary elections. The Iraqi people have become accustomed to this hype, which often ends the day after the vote and even before the pre-determined results are issued. All the promises made by successive governments over the past two decades to improve health have been air in the net.

In Iraq, politics and the media are two sides of the same coin, and few are out of tune. For decades, the Iraqi citizen has not been consulted about any measures related to reforming the political, economic, and healthcare-related issues. This reflects the lack of interest of politicians in studying the general expectations and preferences of the public. On the other hand, the supervisory role of the media is supposed to be positive in criticizing and clarifying the government's measures to reform the health system. Therefore, 68.7% of our studied sample considered that health care did not receive the necessary attention from politicians. Despite the massive number of channels and press (print and visual) in Iraq after 2003, the role of the media was weak in delivering adequate information about the health system and health care to about 56.9% of the respondents. Moreover, 62.2% of them expressed a negative view when they asked about the role of politicians and the media in the health reform process.

Furthermore, results of multivariate analysis, by employing chi-square tests, showed a statistically significant relationship between the patients' variables and their point of view. We have found that the old age group, unmarried, males, unemployed, rural residents, those who believe that people are unhappier now than two decades ago, and those who have an annual income of less than USD 400 more negative opinion on the current health system. Often the judgments and opinions of older people are based on a long personal experience. Older respondents expressed more negative views, which is an important indicator

of the failure of the health system reform from the point of view of people after 2003. The Iraqi family consists of seven people on average [39]. Lack of health insurance programs and the wages imposed on the provision of health care services are largely increasing the economic burden on the heads of household, especially among the elderly and chronically ill patients. Likewise, elderly Croatians, women, and those with low education or low incomes had an unfavorable opinion of patients' shared payments for various health services [40]. In our study, we observed that the unemployed low educated, those who perceived themselves as unhealthy, and those who live in the rural area showed negative opinions on the current health system. In Iraq, there is inequality in the distribution of health services across regions and social classes. People living in rural areas often suffer from low socio-economic conditions, and most have lower educational levels and incomes.

Moreover, the mortality and morbidity rates are higher among low-income people and in less developed regions than in other regions. The significantly high unemployment rate in Iraq, especially in rural areas, may explain the negative views of the unemployed respondents, those with low education, and those who live in rural areas. On the other hand, positive opinions among higher education levels are due to their increased employment opportunities with less possibility of out-of-pocket spending because they enjoy better health status.

Limitation of study

First, there is no doubt that one of the favorite sources of information is to recruit a multi-stage sampling technique to collect data with focusing on household surveys. However, generating reliable public opinion often requires a broader sample that includes most governorates. Second, limited-expression when answering closed questions is the main point of bias in comparative data employing the five-point Likert scale. Third, the study included five aspects of health care (accessibility, quality of care, availability of resources, and the position of politicians and the media). However, adding other aspects such as continuity of care enhances the acceptability of the study even more. Fourth, the researchers acknowledge that a recall bias emerged because the idea of comparing the state of the health system over a long period (i.e., 20 years), depending on the patient's memory, leads to the loss of important events that are likely to affect the evaluation of the health reform process from the patient's opinion.

Conclusion

During the past two decades, Iraq has witnessed fundamental changes in the political, economic, health, education, and social systems. The 2003 US-British coalition military invasion was a turning point in the history of modern Iraq. None of the claimed justifications to invade Iraq were fulfilled except that the Iraqi state has lost its central position and global standing and became a lawless militia state. The basics and capacity building on which the Iraqi health system has been built since the 1996s were enough to ensure its fragile continuity up to 2003. All programs and plans developed by the coalition forces with the Iraqi governments after 2003 did not succeed in formulating a health system that guarantees some aspects of healthcare. Here, we seek fairness in using the available data to present an image close to the minds of the Iraqi citizen, especially for the generations born after 2003. When we compared the current health system with that before 2003 from the people's viewpoint as a different tow era, we found that most (60.5%) of surveyed households have negative opinions in terms of accessibility (61.4%), availability of resources (59.7%), quality of care(53.7%), and the attitudes of politicians to healthcare (62,2%).

Moreover, 66.0% of participants preferred the previous health status before 2003 over the present. All data indicate that the basic pillars of society, which include education, health, food security, and community security, were much better before 2003 than after. While it was possible to establish a Health transition program (HTP) since 2003 that protects the citizen from exploitation and encourages the healthcare provider to innovate by adopting programs such as the Performance-Based Payment System (P4P) and universal health insurance (UHI), and patient classification system (PCS) such as case-mix system or the diagnosis-related groups (DRGs)-based system. However, the national political decision loss caused the delay or prevention of any serious reform step.

Abbreviation

HTP: Health Transformation Program; UN: United Nations; NAM: Non-Aligned Movement; OPEC: Organization of the Petroleum Exporting Countries; WTO: World Trade Organization; IPCP: Individual Partnership and Cooperation Program; NATO: North Atlantic Treaty Organization; UN: United Nation; US: United States; UK: United Kingdom; USD: United States Dollar; ISIS: Islamic State in Iraq and Syria; PSQ-18: Patient Satisfaction Questionnaire: PHCC: Primary Health Care Center; WB: World Bank; SPSS: Statistical Package for Social Science; SD: Standard Deviation; POR: Prevalence Odd Ratio; IKN: Iraq Knowledge Network; P4P: Performance-Based Payment System; UHI: Universal Health İnsurance; PCS: Patient Classification System; DRGs: Diagnosis Related Groups

Declaration

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Availability of data and materials

Data will be available by emailing drsaadalezzi@gmail.com.

Authors' contributions

SAAJ is the study's principal investigator who designed the study and coordinated all aspects of the research, including all steps of the manuscript preparation. He is responsible for the study concept, design, writing, reviewing, editing, and approving the manuscript in its final form. AH, SMA, MAMA, and ASY contributed to collecting, writing, and reviewing the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

We conducted the research following the Declaration of Helsinki. The ethical protocol was approved by the college of

medicine, University of Diyala, Ethics Committee Ref: No/1023 on 26-March -2019. Moreover, written informed consent was obtained from each participant after explaining the study objectives and the guarantee of secrecy.

Consent for publication

Not applicable

Competing interest

The authors declare that they have no competing interests.

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Author Details

[1]Department of Public Health, Faculty of Medicine, Bezmialem Vakif University, Istanbul, Turkey. [2]Internal Medical Department, Faculty of Medicine, Diyala University, Iraq. [3]Medical Biology and Anatomy Department, Faculty of Medicine, Diyala University, Iraq.[4]Department of Family and Community Medicine, Faculty of Medicine, Anbar University, Anbar, Iraq. [5]Faculty of Computer Engineering, Altinbas University, Istanbul, Turkey.

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