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The Impact of Unified Medical Insurance System Implementation (Nphies) on Healthcare Service Quality: Applied Research Case Study in Arrawdha General Hospital

Dammam, Saudi Arabia

Mohammed Ibrahim Alnajjar^{1*}

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ABSTRACT

Ensuring high-quality healthcare services is crucial for the well-being of individuals and the overall development of societies. In Saudi Arabia, healthcare reform efforts under Vision 2030 emphasize the importance of enhancing healthcare service quality. One key aspect of these reforms is implementing the unified medical insurance system, NPHIES. This system aims to improve access to healthcare and enhance the quality of services provided. However, there is a lack of research examining the specific impact of NPHIES on healthcare service quality, particularly in hospitals like Arrawdha General Hospital in Dammam. This study aims to investigate the impact of NPHIES implementation on healthcare service quality at Arrawdha General Hospital in Dammam, Saudi Arabia. By examining the relationship between NPHIES and healthcare service quality, the study seeks to provide valuable insights that can inform healthcare policies and practices in the region. The study has adopted a quantitative approach, collecting data through a questionnaire administered to physicians and administrators at Arrawdha General Hospital. Statistical analysis (descriptive statistics, t-tests, ANOVA, and Pearson's correlation coefficient) have been used to analyze the data. Statistical analysis showed no significant differences in NPHIES implementation or healthcare service quality based on demographics suggesting a consistent perception across different demographic groups. The study also identified a statistically significant positive effect of NPHIES on healthcare service quality, emphasizing its role in improving healthcare services. Future research should examine the impact of the Unified Medical Insurance System (NPHIES) implementation on elderly patient satisfaction and health outcomes in Saudi Arabia.

INTRODUCTION

Since the formation of the Ministry of Health (MOH) in 1950 and the establishment of the initial public health department in Mecca in 1925, the Kingdom of Saudi Arabia (KSA) has experienced incredible developments in healthcare services. At the moment, Saudi Arabia has 487 hospitals with 72,981 beds, which is about 2.2 beds for every 1000 people (Al-Hanawi *et al.*, 2019). The government has given the development of healthcare services of different levels top priority, and in 2018 an additional budget was set aside for social and health services. This dedication to high-quality healthcare is demonstrated by the KSA healthcare system's position of 26th out of 191 countries by the World Health Organization (WHO), which puts it ahead of developed countries like the Canada, United States, and Australia, as well as adjacent Arabian Gulf countries. However, barriers still exist in delivering improved healthcare services to the KSA's rapidly expanding population. The total fertility rate was 3.04 and the yearly population growth rate was 3.2% between 2004 and 2010 (Alrowes, 2023). Saudi Arabia's population is expected to grow to 39.8 million by the year 2025, 54.7 million until 2050, and 61.3 million by 2100, according to UN estimates. With the population predicted to expand from 1 million to 2.5 million older adults by 2020, assisting the elderly has

become more challenging due to longer life expectancies (Alkhamis *et al.*, 2021; Alkhamis & Miraj, 2021).

The current healthcare system is under stress due to this demographic transition, underscoring the necessity for an adequate supply of highly qualified healthcare workers. The implementation of the new strategic scheme, Vision 2030, has presented both problems and possibilities for the healthcare industry to meet its strategic imperatives with its path in the years ahead. Vision 2030 sets priority in all economic sectors and acts as a road map for Saudi Arabia's economic growth (Rahman & Qattan, 2021; Singh *et al.*, 2022). The National Transformation Program (NTP) 2020 was introduced as part of Vision 2030, and it outlines each ministry's strategic goals, key performance indicators (KPIs), and key performance targets (KPTs) (Farghaly Abdelaliem *et al.*, 2023). Healthcare quality improvement has evolved as a crucial emphasis for modern healthcare systems across the world, motivated by a shared desire to improve patient results and satisfaction. This dedication stems from the recognition that high-quality healthcare facilities not only enhance individual health but also significantly contribute to society's well-being and economic development. Countries throughout the world are emphasizing healthcare quality as a critical component of their healthcare reform initiatives, acknowledging its enormous influence on public health

¹ Atlas American University, 8 The Green, Ste #15974 Dover DE, 19901, USA

* Corresponding author's e-mail: alnajjar.mohd@yahoo.com

and healthcare system efficiency (Reibling *et al.*, 2019). Aligned with the worldwide motion, Saudi Arabia has initiated comprehensive healthcare improvements as a component of its Vision 2030, with the primary objective of enhancing healthcare accessibility and quality throughout the country (Al-luhaym & Alshagrawi, 2023). The goal of these changes is to improve the general quality of healthcare services that the nation's people receive by implementing substantial improvements to the health insurance system. For healthcare organizations, providing high-quality services is crucial since it improves beneficiary satisfaction and advances the general well-being of society. It has been demonstrated that higher-quality healthcare may lower the prevalence of disease and increase access to care, which is especially beneficial for those with limited resources (Haque *et al.*, 2020). Improving healthcare service quality is a universal goal, as evidenced by international agreements such as the United Nations Summit's Sustainable Development Goals (SDGs) from 2015 (Pongpiachan & Hashmi, 2020). Both public and commercial healthcare facilities worldwide are working to improve service quality by tackling the different elements that impact it. Implementing systems like medical insurance has been highlighted as an important component of assessing healthcare service quality (Zhou *et al.*, 2020). Despite these considerable advances, research into the influence of Nphies deployment on healthcare service efficiency in Saudi Arabia is still scarce. This study aims to close this gap by investigating the extent of Nphies application at Arrawdha General Hospital in Dammam and its impact on healthcare service quality. By providing light on this essential feature, the study hopes to give significant insights for healthcare professionals and policymakers seeking to improve healthcare delivery and outcomes in Saudi Arabia. Saudi Arabia's Vision 2030 is a revolutionary strategy that emphasizes healthcare's critical role in attaining greater social objectives. The vision's focus on healthcare quality enhancement intends to promote the population's overall health and well-being, hence promoting economic development and growth.

LITERATURE REVIEW

Medical Insurance System

Individuals worldwide rely heavily on the medical insurance system to provide coverage for healthcare services and financial stability. It serves as a social safety net, reducing the financial strain of medical costs and fostering general well-being. Social insurance and private insurance are the two main types of medical insurance systems found around the world. Social insurance provides residents with universal coverage and is financed by necessary contributions from employers, employees, and occasionally the government. National health insurance schemes in countries including the United Kingdom and Canada are two examples. Contrarily, private insurance entails individuals or companies buying private health insurance policies from insurance providers; the specific plan and insurer selected will determine the coverage and

cost (AlJohani & Bugis, 2024). One country with a strong private insurance industry is the United States (Elena Nebolsina, 2018).

Medical insurance systems enhance healthcare access, reduce financial barriers, and promote preventative care, leading to better health outcomes. However, they also pose challenges like moral hazard and adverse selection. Balancing coverage costs with insured demands is crucial for long-term financial stability, and disparate resource allocation can lead to healthcare access inequities. Saudi Arabia's medical insurance system has experienced considerable improvements, ensuring financial stability and accessibility for inhabitants. The system consists of many groups, including the National Health Insurance Scheme, which covers all necessary medical treatments. The program provides financial security for older individuals facing age-related health issues (Al-Hanawi *et al.*, 2018). The Selective Medical Insurance Program (SMIP) provides comprehensive medical coverage for foreigners and their family (Zhou, 2023). The system provides financial security, expanded healthcare access, and enhanced efficiency. Healthcare's growing costs pose issues in terms of coverage, quality, and sustainability. A coordinated and sustainable system requires continuous monitoring and modifications.

Healthcare Service Quality

The idea of healthcare service quality is complex and includes a range of factors and indicators. Its main goal is to satisfy patients' requirements and expectations while keeping in mind accepted norms. The degree to which a medical facility's healthcare services satisfy patients' requirements and expectations in accordance with predetermined criteria is a common definition of healthcare quality (Fatima *et al.*, 2018). It also describes how well healthcare systems and procedures meet or surpass patients' needs and expectations while adhering to legal requirements. The capacity of a patient to pay for healthcare services is referred to as accessibility, and the dependability of healthcare services in providing care and treatment for a patient is referred to as dependability. These two factors are used to determine the quality of healthcare (Swain & Kar, 2018).

The characteristics of healthcare services can be measured in terms of tangibility, empathy, assurance, responsiveness, and reliability (Setiono & Hidayat, 2022). Meeting patients' fair expectations for non-medical aspects of therapy and delivering prompt service are all included in responsiveness. The ability to provide dedicated healthcare services accurately and consistently while guaranteeing accurate invoicing is what is meant by reliability. Assurance includes staff members' attitude of confidence and trust, professionalism, competency, and kindness. The external expression of tangible resources, such as structures, equipment, people, and communication devices, is referred to as tangible. It entails having access to contemporary medical technology and equipment, attractive physical settings, and well-groomed personnel.

Empathy is showing patients that you care about them individually and with compassion by acknowledging their situations while you provide care and therapy (Agustina & Handayani, 2023; Bentum-Micah *et al.*, 2020).

Several indicators are employed to assess the quality of healthcare services, such as avoidable hospital admissions, various medications and therapies imposed in primary care, signs of acute treatment, and measures showing the efficacy of mental health services. Patient experiences and contentment are also major predictors of healthcare service quality (Ng & Luk, 2019). The implementation of a unified medical insurance system has considerably increased access to healthcare while lowering patients' out-of-pocket payments (Al-Hanawi *et al.*, 2021). It has also helped to close the healthcare utilization gap between rural and urban regions, promoting regional equity.

Research Perspectives on the Impact of Health Insurance Systems on Healthcare Service Quality

The influence of health insurance systems on healthcare service quality has been investigated from a variety of viewpoints, both in Saudi Arabia and worldwide. Several research has examined the link between healthcare insurance systems along with the quality of healthcare services, providing light on various elements and dimensions of this complicated subject. One important factor that has been investigated is the effect of health insurance on accessibility to care and healthcare usage (Erlangga *et al.*, 2019). According to research, having health insurance enhances the probability that people would seek medical care, get frequent exams, and receive essential medical treatments. Increased use of healthcare services may contribute to better medical results and higher overall quality of treatment (Djahini-Afawoubo & Aguey, 2022).

Additionally, studies have investigated the connection between patient happiness and health insurance. According to some research, having health insurance

improves patient satisfaction, especially when it comes to financial security and access to care (Manzoor *et al.*, 2019). Further research into the variables impacting patient happiness in healthcare settings is necessary, since past studies have indicated that there can be differences in patient satisfaction depending on insurance status (Meesala & Paul, 2018). Furthermore, there has been discussion on how health insurance may raise the standard of medical care. Research has demonstrated that health insurance can result in improved access to treatment, a greater usage of preventative services, and a higher level of satisfaction with care (Mazurenko *et al.*, 2018). On the other hand, issues including unfair benefit distribution and variations in healthcare quality and accessibility amongst various demographic groups have also been brought to light (Bagnoli, 2019).

Healthcare Sector in Saudi Arabia

Saudi Arabia's healthcare industry is rapidly growing and changing as a result of the government's dedication to raising the quality and availability of healthcare services. The Saudi government is making large investments in the healthcare system as part of Vision 2030, with intentions to boost private sector involvement and privatize several healthcare institutions (Moshashai *et al.*, 2020). The goal of this move toward privatization is to increase effectiveness and lessen the load on the government to deliver healthcare services. One of the most important projects is the National Health Insurance (NHI) program, which tries to build a sustainable healthcare system by collecting monthly financial payments from members (Puteh *et al.*, 2022). This initiative has received tremendous support, with many people eager to pay for NHI, especially those who routinely utilize public healthcare and are pleased with the results. Furthermore, the government offers free medicines to all residents through government-run healthcare facilities and social and public health insurance programs.

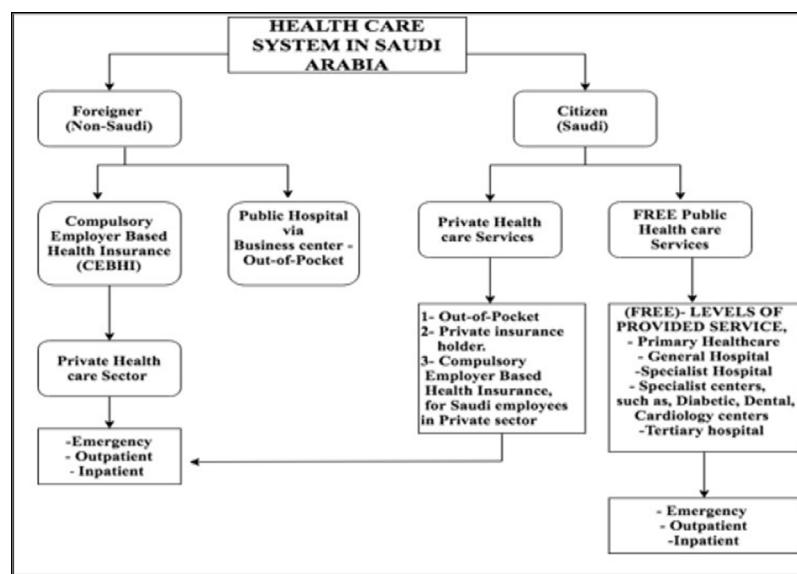


Figure 1: Healthcare system in Saudi Arabia (Puteh *et al.*, 2020)

Saudi Arabia’s healthcare system confronts issues such as growing expenses, fast population expansion, and a high frequency of chronic diseases (Almalki *et al.*, 2011). To address these issues, the government is working to modernize the healthcare system and establish innovative care models. The six systems of care that are keeping well, planned procedures, women and children, urgent problems, chronic illnesses, and the end stage of life are being combined to provide complete and efficient healthcare. Additionally, the Saudi government encourages the application of technology to enhance healthcare services. Initiatives focusing on organizational development and technological effectiveness are being adopted to improve the healthcare system’s efficiency and attractiveness (Sajjad & Qureshi, 2020). The purpose is to apply various healthcare technologies to enhance the organization’s reputation, employees, healthcare system, and general healthcare quality. Overall, Saudi Arabia’s healthcare system is experiencing major transformation to satisfy the rising demand for healthcare services. The government is aiming to develop a sustainable healthcare system that offers all citizens with high-quality and easily accessible healthcare services through Vision 2030 and other reform measures.

Figure 1 shows Saudi Arabia’s healthcare sector, which offers services to non-Saudi citizens through employer-based health insurance, private healthcare, emergency, outpatient, and inpatient services. Citizens have access to public hospitals, private services, and free public services, including primary, general, specialist, and tertiary hospitals (Puteh *et al.*, 2020).

MATERIALS AND METHODS

The study evaluates the impact of NPHIES on healthcare service quality at Arrawdha General Hospital, Dammam, Saudi Arabia, using a quantitative approach and by randomly selecting 300 participants.

Data Collection

The study used a standardized questionnaire to gather data from physicians and administrators at Arrawdha General Hospital. The questionnaire included demographic and NPHIES implementation sections. A total of 300 questionnaires were delivered, with a response rate of 91.67%. Of these, 275 questionnaires were obtained and assessed valid for processing. Data collection was carried out over a set period of time to guarantee complete data acquisition.

Table 1: Distributed and retrieved questionnaires suitable for statistical analysis

Distributed questionnaires	Retrieved and valid for statistical analysis questionnaires	Percentage
300	275	91.67%

Inclusion and Exclusion Criteria

The study included those individuals with the targeted profession such as physicians or administrators which are motivated to participate in the study and are present at the Arrawdha General Hospital. Those who did not provide their agreement to participate in the study or who had no affiliation with the hospital were excluded from study.

Data Analysis

The study utilized the SPSS program to analyze data on the influence of the unified medical insurance system (NPHIES) on healthcare services at Arrawdha General Hospital. Statistical methods included Pearson’s correlation coefficient, Cronbach’s alpha, T-tests, ANOVA, and regression analysis. The study aimed to understand the perceived effects of the system by comparing responses from administrators and physicians. Response degrees were represented using likert scale and verification degrees for each axis were determined using the following formula:

$$\text{Category length} = \frac{\text{highest limit} - \text{lowest limit}}{\text{level No.}} = \frac{5-1}{5} = 0.80$$

Demographics

The frequencies and percentages were calculated for the study sample, and they are represented in the demographic variables, which include:

Gender

Table 2: Distributed and retrieved questionnaires suitable for statistical analysis

Gender	Frequencies	Percentages
Male	142	51.6%
Female	133	48.4%
Total	275	100%

The Table 2 shows that the highest percentage achieved by respondents based on gender was (51.6%) ascribed to (Male), which was followed by a lower percentage (48.4%) allocated to (Female).

Job Position

The Table 3 shows that the largest percentage obtained by respondents as per job position was (72.0%) attributed to (Physician), followed by the lowest percentage of (28.0%) attributed to (Administrator).

Table 3: Distribution of respondents as per their job positions

Job position	Frequencies	Percentages
Physician	198	72.0%
Administrator	77	28.0%
Total	275	100%

Year of Experience

The table 4 shows that the largest percentage obtained by respondents according to years of experience was (51.6%) attributed to (From 5 to less than 10 years), followed by (29.1%) attributed to (less than 5 years). While the lowest percentage was (19.3%) attributed to (10 years and above).

The study tool, a questionnaire, was designed to assess the impact of a Unified Medical Insurance System (NPHIES) on healthcare service quality. It included dimensions like responsiveness, reliability, assurance, tangibility, and empathy. The tool's validity and reliability were confirmed through a pilot sample of 30 individuals.

Table 4: Distribution of respondents as per the years of experience

Years of experience	Frequencies	Percentages
Less than 5 years	80	29.1%
From 5 to less than 10 years	142	51.6%
10 years and above	53	19.3%
Total	275	100%

First Axis: The Implementation of Unified Medical Insurance System (NPHIES):

The Validity and Reliability of the Tool

The study revealed the psychometric characteristics of the questionnaire, by verifying its validity and reliability, by applying it to a pilot sample apart from the original study sample and which consisted of (30) individuals.

The above table makes it evident that each dimension's correlation coefficient values and the questionnaire's total score for the first axis had (high) values, ranging from (.991** - .992**), and that they were all highly significant at the significance value of (0.01). This suggests that the first axis has an elevated level of construct validity.

Table 5: Correlation coefficients between the total score for each dimension and the total score for the first axis: The implementation of a Unified Medical Insurance System (NPHIES)

No.	Dimensions	Correlation Coefficient
1	The First Dimension: Insurance Services Implementation	.991**
2	The Second Dimension: Health Services Implementation	.992**

The Reliability of the Tool: Cronbach Alpha

The Cronbach's alpha reliability coefficient was calculated for the first axis dimensions of implementing a unified medical insurance system (NPHIES) and the total score in the questionnaire.

Table 6 shows high reliability coefficients for the first axis dimensions (.977-.984), with a total reliability coefficient of (.982), indicating the questionnaire's validity, reliability, and results for its application.

Table 6: Cronbach's alpha reliability coefficient for the dimensions and the total score for the first axis

No.	Dimensions	Statements No.	Cronbach's alpha coefficient
1	The First Dimension: Insurance Services Implementation	10	.984
2	The Second Dimension: Health Services Implementation	10	.977
Total		20	.982

Second Axis: Healthcare Service Quality

The Validity and Reliability of the Tool

The internal consistency validity was assessed by calculating

the Pearson correlation coefficient between each statement's scores and the total score of the dimension from the second axis: healthcare service quality.

Table 7: Pearson correlation coefficients between individual statement scores and the total score for the dimension in the second axis of Healthcare Service Quality

Statement No.	Correlation Coefficient	Statement No.	Correlation Coefficient	Statement No.	Correlation Coefficient
The First Dimension: Responsiveness					
21	.986**	22	.979**	23	.964**
24	.932**	25	.960**		
The Second Dimension: Reliability					

26	.878**	27	.903**	28	.881**
29	.922**	30	.864**		
The Third Dimension: Assurance					
31	.917**	32	.977**	33	.940**
34	.924**	35	.851**		
The Fourth Dimension: Tangibility					
36	.856**	37	.974**	38	.868**
39	.896**	40	.970**		
The Fifth Dimension: Empathy					
41	.880**	42	.962**	43	.967**
44	.940**	45	.919**		

Table 7 shows that the correlation coefficients of statements with the total score of the second axis of healthcare service quality were all statistically significant at a level of (0.01). These coefficients ranged in responsiveness, reliability, assurance, tangibility, and empathy, indicating high internal consistency in the questionnaire's second axis dimensions. The construct validity of the second axis dimension, Healthcare

Service Quality, was confirmed by examining correlation coefficients between each dimension's total score and the second axis' total score.

The Reliability of the Tool: Cronbach Alpha

The Cronbach's alpha reliability coefficient was calculated for the second axis of Healthcare Service Quality and the total score in the questionnaire, as shown in the table. The

Table 8: Cronbach's alpha reliability coefficient for the dimensions and the total score for the second axis: Healthcare Service Quality

No.	Dimensions	Statements No.	Cronbach's alpha coefficient
1	The First Dimension: Responsiveness	5	.968
2	The Second Dimension: Reliability	5	.972
3	The Third Dimension: Assurance	5	.977
4	The Fourth Dimension: Tangibility	5	.978
5	The Fifth Dimension: Empathy	5	.972
Total score		25	.979

table shows high reliability coefficients for healthcare service quality dimensions (.968-.978) and total reliability coefficient (.979), indicating the questionnaire's validity and reliability in its results, indicating its reliability for application.

RESULTS

The First Axis: The Implementation of Unified Medical Insurance System (NPHIES)

The table shows that the implementation of a Unified

Medical Insurance System (NPHIES) at Arrawdha General Hospital in Dammam has achieved a high response degree, with an overall mean of (3.71) and a standard deviation of (.629). This success is attributed to the accurate information provided by the National Health Information Center about health practitioners and facilities, which supports the development of the Saudi health insurance industry.

Table 9: The arithmetic means and standard deviations of the respondents' responses "The First Axis: The implementation of a Unified medical insurance system (NPHIES)"

No	Dimensions of the first axis	Mean	Standard deviation	Response degree	Rank
1	The First Dimension: Insurance Services Implementation	3.69	.821	High	2
2	The Second Dimension: Health Services Implementation	3.73	.670	High	1
The Overall Mean		3.71	.629	Moderate	

The Dimensions of the First Axis

The First Dimension: Insurance Services Implementation

The first dimension of insurance services implementation in Saudi Arabia is high, with a mean of (3.69) and a standard deviation of (.821). The system allows insurance

parties to file and track complaints, verifies policy validity, and seeks to improve and develop the health insurance industry. The Unified Medical Insurance System (NPHIES) has been successful in implementing insurance services, allowing for flexibility, and strengthening health insurance in Saudi Arabia.

Table 10: Frequencies, percentages, arithmetic means, and standard deviations of the respondent's responses to the first dimension: Insurance Services Implementation

No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
1	There is a unified channel for insurance transactions between health service providers and insurance companies.	F	43	19	41	47	125	3.70	1.485	5	High
		%	15.6	6.9	14.9	17.1	45.5				
2	The application of the system standardizes the medical and technical symbols used in the insurance sector.	F	50	17	53	37	118	3.57	1.525	9	High
		%	18.2	6.2	19.3	13.5	42.9				
3	The system assists in sending and receiving notifications and extracting periodic reports related to insurance transactions.	F	42	21	39	26	147	3.78	1.522	4	High
		%	15.3	7.6	14.2	9.5	53.5				
4	The system measures the extent of the commitment of service providers and insurance companies to the Council of Health Insurance policies.	F	41	16	38	46	134	3.79	1.470	3	High
		%	14.9	5.8	13.8	16.7	48.7				
5	The service allows all insurance parties to file and track complaints submitted to the Health Insurance Board.	F	37	8	50	27	153	3.91	1.437	1	High
		%	13.5	2.9	18.2	9.8	55.6				
6	The system verifies the validity of the insurance policy of the beneficiary (the patient) to obtain the required service.	F	46	10	47	20	152	3.81	1.532	2	High
		%	16.7	3.6	17.1	7.3	55.3				
7	The system accelerates the beneficiary's access to health services and improves users' experience.	F	51	13	48	28	135	3.67	1.556	6	High
		%	18.5	4.7	17.5	10.2	49.1				
8	The system seeks to improve and develop the health insurance industry in the Kingdom.	F	61	20	44	21	129	3.50	1.635	10	High
		%	22.2	7.3	16.0	7.6	46.9				
9	The system seeks to improve and develop the health insurance industry in the Kingdom.	F	44	12	67	38	114	3.60	1.457	7	High
		%	16.0	4.4	24.4	13.8	41.5				
10	The system provides information on the state of the Saudi health insurance industry more accurately to allow for its development.	F	46	12	72	30	115	3.57	1.477	8	High
		%	16.7	4.4	26.2	10.9	41.8				
The Overall mean							3.69	.821	High		

The Second Dimension: Health Service Implementation

Table 11 reveals a high mean for the second dimension of health services implementation, attributed to the effectiveness of unified digital health services. The system

enhances healthcare quality, reduces costs, and facilitates information flow among facilities. The unified insurance system accelerates verification and approval processes, facilitating patient data exchange and treatment. This system improves decision-making and patient outcomes.

Table 11: Frequencies, percentages, arithmetic means, and standard deviations of the respondent's responses to the second dimension: Health Services Implementation

No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
11	The system provides a comprehensive view of the patient's treatment history.	F	76	17	20	2	160	3.56	1.79 0	7	High
		%	27.6	6.2	7.3	.7	58.2				
12	The application of the system facilitates the exchange of patient's health information	F	45	7	31	3	189	4.03	1.54 3	2	High
		%	16.4	2.5	11.3	1.1	68.7				
13	The application of the system helps to speed up the verification of the treatment mechanism and approval requests.	F	53	1	18	2	201	4.08	1.59 6	1	High
		%	19.3	.4	6.5	.7	73.1				
14	The system facilitates matching the patient's national identity number and obtaining basic national information from the main source.	F	62	12	20	25	156	3.73	1.66 8	5	High
		%	22.5	4.4	7.3	9.1	56.7				
15	The system enhances patient safety by exchanging unified prescriptions across the Kingdom	F	58	11	58	24	124	3.53	1.58 3	8	High
		%	21.1	4.0	21.1	8.7	45.1				
No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
16	The system facilitates the flow of relevant information among healthcare facilities for treatment and research purposes.	F	60	12	62	28	113	3.44	1.57 3	10	High
		%	21.8	4.4	22.5	10.2	41.1				
17	The system provides updated clinical data to healthcare providers	F	58	12	55	30	120	3.52	1.57 6	9	High
		%	21.1	4.4	20.0	10.9	43.6				
18	The system helps exchange information needed to refer a patient for care from one facility to another.	F	40	7	59	6	163	3.89	1.48 8	4	High
		%	14.5	2.5	21.5	2.2	59.3				
19	The system helps direct access to information about health practitioners and health facilities from the National Center for Health Information	F	71	16	27	4	157	3.58	1.75 0	6	High
		%	25.8	5.8	9.8	1.5	57.1				
20	The system enables the exchange of vaccination information for public health monitoring and management.	F	50	10	32	8	175	3.90	1.59 2	3	High
		%	18.2	3.6	11.6	2.9	63.6				
The Overall mean							3.73	.670	High		

Second Axis: Healthcare Service Quality

From table 12, the study reveals that healthcare service quality at Arrawdha General Hospital in Dammam has a high response degree, with an overall mean of 3.80 and a standard deviation of .644. The reliability, responsiveness, empathy, tangibility, and assurance dimensions all have

high response degrees. This is attributed to the efficiency and effectiveness of the healthcare service provided by the Unified Health Insurance System. The adequacy of resources and services, such as medicines, doctors, supplies, and outpatient rooms, contribute to the high response degree.

Table 12: Frequencies, percentages, arithmetic means, and standard deviations of the respondent’s responses to the second axis: Healthcare Service Quality

No.	Dimensions of the second axis	Mean	Standard deviations	Response degree	Rank
1	The First Dimension: Responsiveness	3.88	.877	High	2
2	The Second Dimension: Reliability	4.03	.876	High	1
3	The Third Dimension: Assurance	3.62	1.120	High	5
4	The Fourth Dimension: Tangibility	3.72	1.056	High	4
5	The Fifth Dimension: Empathy	3.73	.966	High	3
The overall mean		3.80	.644	High	h

The Dimensions of the Second Axis

Table 13 shows that the overall mean for responsiveness in the first dimension was (3.88), with a standard deviation of .877. The system’s effectiveness in responding to patient requirements and providing efficient communication between insurance companies and medical care providers was attributed to its high response degree. The system’s success in sending notifications to users to keep them informed about the latest developments in their health status was attributed to its ability to follow up with patients regularly. The system’s role in enhancing

communication between healthcare providers in both public and private institutions was also attributed to its ability to coordinate between healthcare providers, ensuring ease of communication and enhancing the quality of healthcare in all institutions. The unified health insurance system at Arrawdha General Hospital Dammam has achieved high response degrees in terms of responsiveness, communication, and coordinating between healthcare providers. The system’s ability to effectively address patient needs and improve communication between providers is a key factor in its success.

Table 13: Frequencies, percentages, arithmetic means, and standard deviations of the respondent’s responses to the first dimension: Responsiveness

No	Statement	Response Degree					Mean	SD	Rank	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
21	The system enhances the quick response to all complaints of system users.	F	56	18	1	3	197	3.97	1.68 0	2	High
		%	20.4	6.5	.4	1.1	71.6				
22	The system provides efficient means of communication to receive users’ requests and effectively deal with them.	F	67	12	15	8	173	3.76	1.73 3	4	High
		%	24.4	4.4	5.5	2.9	62.9				
23	The system enhances the quality of communication between insurance companies and medical service providers by ensuring the flow of information.	F	67	4	7	5	192	3.91	1.72 6	3	High
		%	24.4	1.5	2.5	1.8	69.8				
No	Statement	Response Degree					Mean	SD	Rank	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					

24	The system periodically sends notifications to all users to make them acquainted with the latest developments.	F	44	11	16	12	192	4.08	1.53 6	1	High
		%	16.0	4.0	5.8	4.4	69.8				
25	The system enhances communication between healthcare providers in both public and private healthcare	F	76	14	5	9	171	3.67	1.79 9	5	High
		%	27.6	5.1	1.8	3.3	62.2				
The overall mean								3.88	.877	High	

The Second Dimension: Reliability

The table demonstrates a high response degree to the second dimension of reliability, attributed to the NPHIES platform's quality control and supervisory services, the efficiency

of medical staff in tracking patient medical history, and the system's ability to reduce healthcare service costs and time, ultimately improving healthcare decision-making and increasing transparency in insurance and medical services.

Table 14: Frequencies, percentages, arithmetic means, and standard deviations of the respondent's responses to the second dimension: Reliability

No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
26	All medical records and insurance files are kept within one unified system to enhance the reliability of the information.	F	28	40	21	3	183	3.99	1.49 9	4	High
		%	10.2	14.5	7.6	1.1	66.5				
27	The medical staff depends on the information provided by the portal for tracking the medical history of patients.	F	18	38	16	9	194	4.17	1.37 2	1	High
		%	6.5	13.8	5.8	3.3	70.5				
28	The system enhance transparency in all medical and insurance services.	F	32	31	20	4	188	4.04	1.50 4	3	High
		%	11.6	11.3	7.3	1.5	68.4				
29	The NPHIES platform offers a range of quality control and supervisory services to raise the Health Insurance Council's efficiency.	F	26	30	22	10	187	4.10	1.43 0	2	High
		%	9.5	10.9	8.0	3.6	68.0				
30	The system reduces the cost and time of providing healthcare services to improve healthcare decision-making.	F	44	33	18	7	173	3.84	1.61 2	5	High
		%	16.0	12.0	6.5	2.5	62.9				
Total			4.03					High			

The Third Dimension: Assurance

Table 15 reveals a high response degree for the third dimension of assurance, attributed to the system's competence, professionalism, and kindness. The system ensures rapid intervention, user satisfaction, and translates

cooperative health insurance principles into practice. The speed of response and the unified health insurance system translate health insurance principles into practice, ensuring quality care.

Table 15: Frequencies, percentages, arithmetic means, and standard deviations of the respondent's responses to the third dimension: Assurance

No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
31	The system ensures users' satisfaction with healthcare service delivery.	F	62	12	20	25	156	3.73	1.66 8	2	High
		%	22.5	4.4	7.3	9.1	56.7				

32	The system improves the process of data sharing and management	F	58	11	58	24	124	3.53	1.58 3	3	High
		%	21.1	4.0	21.1	8.7	45.1				
33	The system translates the principles of cooperative health insurance into practice.	F	60	12	62	28	113	3.44	1.57 3	5	High
		%	21.8	4.4	22.5	10.2	41.1				
34	The system shall not disclose the identity of the persons whose personal data is mentioned on the platform.	F	58	12	55	30	120	3.52	1.57 6	4	High
		%	21.1	4.4	20.0	10.9	43.6				
35	The system guarantees rapid intervention if the patient does not receive his required service	F	44	8	44	23	156	3.87	1.50 8	1	High
		%	16.0	2.9	16.0	8.4	56.7				
The overall mean								3.62	1.120	High	

The Fourth Dimension: Tangibility

Table 16 The fourth dimension of the system's efficiency and quality was praised for its attractiveness, ease, and flexibility in handling data. High responses were given

to interactive browsing, structured search processes, and no difficulty in registration, indicating the system's attractiveness and ease of use, encouraging patients to use it for health services.

Table 16: Frequencies, percentages, arithmetic means, and standard deviations of the respondent's responses to the fourth dimension: Tangibility

No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
36	The system platform is attractive.	F	54	12	34	28	147	3.73	1.59 3	4	High
		%	19.6	4.4	12.4	10.2	53.5				
37	The search process on the website is structured and highly organized	F	43	11	47	32	142	3.80	1.49 0	2	High
		%	15.6	4.0	17.1	11.6	51.6				
38	Browsing the system is done interactively.	F	33	16	51	22	153	3.89	1.43 2	1	High
		%	12.0	5.8	18.5	8.0	55.6				
39	There is smoothness and flexibility in dealing with system data.	F	42	13	54	28	138	3.75	1.48 6	3	High
		%	15.3	4.7	19.6	10.2	50.2				
40	There is no difficulty in the registration process.	F	62	8	67	28	110	3.42	1.57 0	5	High
		%	22.5	2.9	24.4	10.2	40.0				
The overall mean								3.72	1.05 6	High	

The Fifth Dimension: Empathy

The fifth dimension of empathy in Table 17 has a high response degree, with a mean of (3.73) and a standard deviation of (.966). The system prioritizes stakeholder

needs, works around the clock, and is highly responsive to problems. Its efficiency in providing specialized care, tracking user needs, and immediate response to stakeholder problems contribute to its high response degree. Third:

Table 17: Frequencies, percentages, arithmetic averages, and standard deviations of the respondent's responses to the fifth dimension: Empathy

No	Statement	Response Degree					Mean	SD	Ran k	Response Degree	
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
41	The system is designed in such a way that satisfies all stakeholders' needs.	F	41	16	38	46	134	3.79	1.47 0	3	High
		%	14.9	5.8	13.8	16.7	48.7				
42	The system sets the needs and expectations of all stakeholders	F	37	8	50	27	153	3.91	1.43 7	1	High
		%	13.5	2.9	18.2	9.8	55.6				

43	The system works around the clock to ensure the availability of required medical and insurance information.	F	46	10	47	20	152	3.81	1.53 2	2	High
		%	16.7	3.6	17.1	7.3	55.3				
44	The system keeps all stakeholders informed of the latest news and updates.	F	51	13	48	28	135	3.67	1.55 6	4	High
		%	18.5	4.7	17.5	10.2	49.1				
No	Statement	Response Degree						Mean	SD	Ran k	Response Degree
		Strongly agree	Disagree	Neutral	Agree	Strongly agree					
45	The system is highly responsive in dealing with stakeholders' problems.	F	61	20	44	21	129	3.50	1.63 5	5	High
		%	22.2	7.3	16.0	7.6	46.9				
The overall mean								3.73	.966	High	

Statistical Analysis of Study Variables for Unified Medical Insurance System Implementation

The findings of the research showed that, for both the insurance and health services implementation aspects along with the overall mean, there were no statistically significant variations in the mean scores of the study samples according to gender, job position, or years of experience. These results imply that perspectives on the

implementation of the unified medical insurance system were unaffected by factors such as gender, job title, or years of experience.

Individuals from a variety of demographic backgrounds had comparable opinions about the system's implementation, demonstrating a uniform understanding of its significance and effect on Saudi Arabia's healthcare system's quality.

Table 18: Demographic Analysis using T-test and One-Way ANOVA

Variable	Test	Dimension	Sig.	Result
Gender	T-test	Insurance Services Implementation	0.519	Not significant (p > 0.05)
		Health Services Implementation	0.6	Not significant (p > 0.05)
		Overall Mean	0.484	Not significant (p > 0.05)
Job Position	T-test	Insurance Services Implementation	0.983	Not significant (p > 0.05)
		Health Services Implementation	0.1	Not significant (p > 0.05)
		Overall Mean	0.374	Not significant (p > 0.05)
Years of Experience	One-Way ANOVA	Insurance Services Implementation	0.696	Not significant (p > 0.05)
		Health Services Implementation	0.949	Not significant (p > 0.05)
		Overall Mean	0.785	Not significant (p > 0.05)

Fourth: Analysis of Healthcare Service Quality Based on Gender, Job Position, and Years of Experience

As per the tables above, the evaluation of healthcare service quality according to years of experience, job position, and gender did not show significant differences in most of the dimensions.

Responsiveness, reliability, assurance, tangibility, empathy, and mean did not significantly change based on gender. Likewise, job position had no apparent

impact on these dimensions, except for tangibility, where administrators gave it a higher rating than physicians, but not very significantly. Except for responsiveness, where differences were getting close to significance, years of experience likewise revealed no significant differences in other aspects. These results imply that, in the studied context, views of the quality of healthcare services are not significantly influenced by factors such as years of experience, gender, or work position.

Table 19: Analysis of healthcare service quality based on gender using T-test

Dimensions	Gender	N	Mean	SD	T	DF	Sig. (2tailed)	Sig
The First Dimension: Responsiveness	Male	142	3.79	.856	-1.705	273	.089	Not-significant
	Female	133	3.97	.894				

Dimensions	Gender	N	Mean	SD	T	DF	Sig. (2tailed)	Sig
The Second Dimension: Reliability	Male	142	4.02	.901	-.238	273	.812	Not-significant
	Female	133	4.04	.853				
The Third Dimension: Assurance	Male	142	3.57	1.148	-.654	273	.514	Not-significant
	Female	133	3.66	1.092				
The Fourth Dimension: Tangibility	Male	142	3.68	1.118	-.712	273	.477	Not-significant
	Female	133	3.77	.987				
The Fifth Dimension: Empathy	Male	142	3.71	1.011	-.375	273	.708	Not-significant
	Female	133	3.76	.919				
The overall mean	Male	142	3.76	.696	-1.095	273	.275	Not-significant
	Female	133	3.84	.582				

Table 20: Analysis of healthcare service quality based on job position using T-test

Dimensions	Job position	N	Mean	SD	T	DF	S i g . (2tailed)	Sig
The First Dimension: Responsiveness	Physician	198	3.94	.850	1.759	273	.080	Not-significant
	Administrator	77	3.73	.933				
The Second Dimension: Reliability	Physician	198	4.06	.835	.987	273	.325	Not-significant
	Administrator	77	3.95	.976				
The Third Dimension: Assurance	Physician	198	3.66	1.128	1.121	273	.263	Not-significant
	Administrator	77	3.50	1.099				
The Fourth Dimension: Tangibility	Physician	198	3.65	1.077	-1.783	273	.076	Not-significant
	Administrator	77	3.90	.984				
The Fifth Dimension: Empathy	Physician	198	3.73	.968	-.235	273	.814	Not-significant
	Administrator	77	3.76	.967				
The overall mean	Physician	198	3.81	.662	.496	273	.620	Not-significant
	Administrator	77	3.77	.597				

Table 21: Analysis of healthcare service quality based on years of experience using ANOVA

Dimensions	Source of variance	Sum of Squares	DF	Mean Square	(F) value	Sig.
The First Dimension: Responsiveness	Between Groups	3.818	2	1.909	2.507	.083
	Within Groups	207.126	272	.761		
	Total	210.943	274	--		
The Second Dimension: Reliability	Between Groups	.913	2	.456	.592	.554
	Within Groups	209.495	272	.770		
	Total	210.407	274	--		
The Third Dimension: Assurance	Between Groups	4.145	2	2.073	1.660	.192
	Within Groups	339.611	272	1.249		
	Total	343.756	274	--		
The Fourth Dimension: Tangibility	Between Groups	3.773	2	1.887	1.701	.185
	Within Groups	301.747	272	1.109		
	Total	305.520	274	--		
The Fifth Dimension: Empathy	Between Groups	2.017	2	1.009	1.082	.340
	Within Groups	253.538	272	.932		
	Total	255.555	274	--		

The overall mean	Between Groups	1.291	2	.646	1.564	.211
	Within Groups	112.279	272	.413		
	Total	113.570	274	--		

Fifth: Impact of the Unified Medical Insurance System (NPHIES) on Healthcare Service Quality in Arrawdha General Hospital, Dammam

To answer this question, a simple linear regression analysis was used, and the following table shows that: The health insurance system has a significant positive effect on the healthcare service quality at Arrawdha

General Hospital in Dammam, accounting for 54% of the variation in service quality. This is due to the system’s ability to enhance communication between healthcare providers and patients, providing updated clinical data. This system also improves the effectiveness of communication between healthcare providers and patients.

Table 22: The effect of applying the health insurance system on the healthcare service quality in Arrawdha General Hospital in Dammam

Independent variable	B	Beta	R	R2	T value	Sig. T
The implementation of a Unified medical insurance system (NPHIES)	.752	.735	.735a	.540	17.912	.000
Constant	1.008					
Adj R2	.539					
F. value	320.842					
Sig F	.000b					

DISCUSSION

The study conducted at Arrawdha General Hospital in Dammam aimed to assess the implementation of the unified medical insurance system (NPHIES) and its impact on healthcare service quality. The results showed that the implementation of NPHIES had a high response degree, with an overall mean of (3.71), a standard deviation of (.629), and a high response degree. The overall mean for the first dimension of Insurance Services Implementation was also high, with an arithmetic mean of (3.69), a standard deviation of (.821). The results can be supported by a study conducted by (Li *et al.*, 2023), which found that the adoption of a unified medical insurance system increases health insurance’s resilience to risk and significantly improves rural populations’ access to healthcare. This system contributes to closing the disparity in healthcare utilization between rural and urban areas and enhancing regional equity. Overall, the health insurance system plays a crucial role in improving healthcare service quality in Dammam.

The second dimension of Healthcare Service Quality was also high, with an overall mean of (3.80), a standard deviation of (.644), and a high response degree. The overall mean for the first dimension of Responsiveness was high, with an arithmetic mean of (3.88), and a standard deviation of (.877). The overall mean for the second dimension of Reliability was high, with an arithmetic mean of (4.03), and a standard deviation of (.876). The overall mean for the third dimension of Assurance was high, with an arithmetic mean of (3.62), and a standard deviation of (1.120). The overall mean for the fourth dimension of Tangibility was high, with an arithmetic mean of (3.72), and a standard deviation

of (1.056). The overall mean for the fifth dimension of Empathy was high, with an arithmetic mean of (3.73), and a standard deviation of (.966).

There were no statistically significant differences in the responses of the study sample regarding the level of implementing the unified medical insurance system (NPHIES) attributed to the variables (gender, job position, and years of experience) in both dimensions. There were no statistically significant differences at the level of significance of (0.05) between the mean scores of the study sample regarding the first axis: implementation of a Unified medical insurance system (NPHIES) attributed to the (gender) variable in either dimension

CONCLUSION

The study carried out at Dammam’s Arrawdha General Hospital offers important insights into how the Unified Medical Insurance System (NPHIES) is being implemented and how it affects the standard of healthcare services. The results show that respondents had a favorable opinion of NPHIES implementation, pointing to a development in the improvement of the healthcare system. The perception of healthcare service quality was generally favorable, with reliability receiving the highest rating across all evaluated dimensions. Based on years of experience, work position, or gender, statistical analysis did not show any significant differences in the quality of healthcare services provided by NPHIES or its execution, indicating a similar view across all demographic groups. Notably, the study found that NPHIES had a statistically significant beneficial influence on healthcare service quality, highlighting the system’s significance in enhancing healthcare services. The recommendations to keep

making investments in the health and social sectors, employ professionals, supply required medical devices, recruit competent doctors, and provide an appropriate number of nursing assistants demonstrate the need for continuous development in healthcare delivery.

RECOMMENDATIONS

The recommendations include the need for the Saudi government to continue investing in health and social sectors, enlisting the help of specialists, providing all necessary medical devices and equipment, attracting experienced and competent doctors, and providing an adequate number of nursing assistants for doctors. Future studies should focus on the impact of health service quality on patients' satisfaction at Arrawdha General Hospital in Dammam and the effect of applying the unified health insurance system on the health of elderly patients.

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