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Awareness and Readiness of Healthcare Workers Regarding National Transformation Program in the Health Sector in Tabuk Region, Saudi Arabia

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Keywords
Awareness and readiness · Healthcare workers · National Transformation Program · Health sector · Saudi Arabia

Abstract

Introduction: The National Transformation Program is a program that aims to develop the necessary infrastructure and create an environment that enables the public, private, and non-profit sectors to achieve Vision 2030 in Saudi Arabia. This study aimed to assess the awareness and readiness of healthcare workers regarding the National Transformation Program in the health sector of Tabuk region, Saudi Arabia. ***Methods:*** We conducted a cross-sectional descriptive study among healthcare workers in Tabuk region using a "Google Form" based questionnaire. We sent the web link to all (100%) employees' official email addresses through the Information Technology department's internal communication system. The study included only those who completed the "Google Form" with the required data. The "Google Form" inquired about the respondents' background characteristics, awareness regarding the National Transformation Program, and readiness for the transformation process. We analyzed the data with SPSS 16.0 for Windows and OpenEpi version 3.01. ***Results:*** Of 492 respondents, all (100%) had heard of the program and nearly three-quarters (71.5%) knew its strategic objectives, mainly through social media (72.4%). However, only about half of the respondents (49%) had a clear understanding of the institutional transformation process and the new model of care in the health sector. The main concern of the respondents was job security (41.1%), while the majority of them felt they were part of the program (89.9%) and supported it (92.2%). Their readiness for the transformation process was significantly higher ($p < 0.05$) among women and physicians than among men and other healthcare workers. ***Conclusion:*** Despite having a high level of awareness regarding the National Transformation Program in the health sector, some healthcare workers lacked a clear understanding of the institutional transformation process and the new model of care in the health sector. It is essential to address the expectations and concerns of different groups of healthcare workers to ensure their engagement and commitment to the program.

Introduction

Saudi Vision 2030 is a strategy to transform Saudi Arabia's economy by increasing its non-oil revenue and expanding its public services in areas such as health, education, infrastructure, recreation, and tourism [1, 2]. The aims are to boost business and investment, expand

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foreign trade, establish non-oil-based industries, and produce different kinds of goods and products for consumers [3]. To achieve Vision 2030 goals, the Kingdom has divided its plan into 3 5-year phases. The National Transformation Program (NTP) is the first phase, and it has its own goals and targets that have to be accomplished by 2020 [4, 5]. The NTP is one of the operational programs of Vision 2030, which aims to prepare government sectors to perform their roles in an efficient way to produce the highest quality of service [6].

Health Sector Transformation Plan (HSTP) is a long-term roadmap for the healthcare system reforming process [6]. Over the last 2 decades, the healthcare services system in Saudi Arabia has undergone significant changes [7]. The majority of these services, 60%, are offered by the Saudi Ministry of Health at no cost, while the rest are provided by other sources, such as the private sector [7, 8]. By 2020, the Saudi health system was expected to undergo changes and transformations to cope with future challenges [7]. The Saudi government had adopted a long-term strategic plan for 2010–2020 that aimed to decentralize healthcare delivery and provide advanced levels of care in each region [7].

Similarly, other GCC nations envisioned sustainable health sector development through long-term policies, such as Oman's Vision 2020 and 2040, the UAE, Bahrain, and Kuwait's Vision 2030, and Qatar's National Vision 2020 [9]. Reforming the healthcare system includes huge changes with big challenges, and it is variable from each country and from many aspects either the objectives of the reforming or the process of the reforming itself, or the outcomes. The current Saudi healthcare system has many flaws that have been revealed by various research papers. For example, a study by Sebai et al. [8] found that Saudi Arabia is facing high costs and concerns about the quality of healthcare services. According to Saudi Arabia's Vision 2030, the government has planned to restructure and reform the healthcare system by involving the private sector and increasing its share from 25% to 35% in the coming years [10, 11].

Numerous aspects of health transformation have been studied in other countries and regions, such as the UK [12], the USA [13], Turkey [14], Iran [15], Cyprus [16], Greece [17], Canada [18], and South Asia [19]. However, the healthcare sector's reorganization may hamper clinicians' ability to apply evidence-based practices to patient care [20]. Privatization may affect access to medical care depending on the hospital's budgeting and payment systems, and policymakers should ensure quality and affordability for vulnerable groups [21]. Effective knowledge exchange is sustained through informal networking driven by mutual benefits and convergence in organizational and technological settings and goals among group members [12].

An earlier study assessed the preferences of Greek citizens for healthcare reform [17], but the perspective of healthcare providers was not evaluated. Healthcare providers are increasingly facing a wide range of social, financial, political, regulatory, and cultural challenges, associated with demands for higher efficiency, improved quality, and lower costs [22]. The Council of Cooperative Health Insurance (CCHI) announced its plan to enhance the level of medical services provided to its beneficiaries in Saudi Arabia and issued a decree that requires all healthcare providers to comply with certain standards and regulations [23]. To improve the quality of services and the satisfaction of patients, healthcare settings need to adopt a more modern and effective management approach [24]. Further studies are required to evaluate the update of quality measures in healthcare [25].

It is important to intensify the research activities related to the national transformation in the healthcare sector in Saudi Arabia for coming up with the best perceptions, which would help clarify the process of transformation more accurately, and give the decision-makers a clear perception regarding the transformation, and thus contribute to the success of the transformation and achieve the Vision 2030 goals. Data are lacking about the awareness and readiness of the healthcare providers regarding the National Transformation Program in the Kingdom's health sector. The national transformation in the healthcare sector is full of challenges that need to be studied and explored.

Healthcare workers are the key stakeholders in the National Transformation Program of the Saudi health sector. This program has implications for their roles, responsibilities, skills, performance, and satisfaction levels. Moreover, they can provide valuable insights and feedback on how the program affects the quality and efficiency of health services; it is important to understand their perceptions regarding the program. The success of this program largely depends on the awareness and readiness of healthcare workers, who are directly involved in providing and improving health services. Therefore, our study aimed to assess the awareness and readiness of healthcare workers in the Tabuk region about the National Transformation Program in the Saudi health sector.

Methods

This cross-sectional descriptive study was conducted in Tabuk region among selected healthcare workers from Civil Services and Hospital Operations Projects (HOPs) during the period between

Table 1. Total number of healthcare workers in Tabuk region by different categories

Categories	Civil services		Hospital operation projects (HOPs)		Total
	Saudi	non-Saudi	Saudi	non-Saudi	
Pharmacist	81	2	46	4	133
Health Assistant	48	152	6	1	207
Specialist Non-physician	340	20	278	25	663
Technician	962	5	423	19	1,409
Nurse	2,015	63	323	1,134	3,535
Physician	166	965	106	360	1,597
Administrative Personnel	999	–	380	1	1,380
Total	4,611	1,207	1,562	1,544	8,924

Data source: Human Resources Department, General Directorate of Health Affairs in Tabuk Region, Kingdom of Saudi Arabia; October 2018.

October 2018 and February 2019. A self-administered questionnaire was developed by our research team for the purpose of this study. The questionnaire was composed of 23 questions, divided into 3 sections including (a) demographic data of the research participants, (b) awareness-related information about the National Transformation Program in the Saudi health sector, and (c) readiness-related information about the National Transformation Program in the Saudi health sector. The questionnaire was designed to align with the objectives of the study. The questions were meticulously formulated to assess the intended variables, avoiding ambiguity, bias, irrelevance, and inconsistency.

Furthermore, the validity and reliability of the questionnaire were ensured by conducting a pilot test among 25 healthcare workers in King Fahad Specialized Hospital, Tabuk. A convenience sampling technique was employed to select a sample of 5% of the target population for the pilot testing. The pilot respondents provided feedback on each question (with answer options) regarding their clarity, relevance, and difficulty. The feedback and results of the pilot test were utilized to revise and refine the questionnaire. Subsequently, a "Google Form" was generated based on the final version of the questionnaire. As of October 2018, a total of 8,924 healthcare workers were working in different government health facilities in Tabuk region (Table 1). The predeveloped "Google Form" web link was sent to all (100%) healthcare workers in the Tabuk region to their official MOH email addresses through the internal communication system of the Information Technology department. Figure 1 illustrates the detailed steps of the methods of the present study in a flow chart.

The questionnaire included 10 questions on readiness for the transformation process. Answers to each of these questions were given scores from 1 to 5 indicating the level of readiness for transformation with a total score of 50 points. The answer strongly agree was given a score of 5, agree was given 4, neutral was given 3, disagree was given 2 points, and strongly disagree was given one point. We used a one-way ANOVA (analysis of variance) to test for differences in the mean scores of two or more groups based on one independent variable. The independent variable was the category of the respondents (gender, nationality, occupation, or years of experience), and the dependent variable was the readiness score. We reported the mean scores along with the 95% confidence intervals and the p values for each category. The p values were compared to a significance level of 0.05.

In this study, the minimum sample size was 369 (confidence level = 95% and margin of error = 5%). This sample size was calculated by using an online sample size calculator developed by SurveyMonkey [26]. The study included the healthcare workers who completed the "Google Form" with the required data. All collected data were analyzed using the statistical software titled "SPSS 16.0 for Windows" (SPSS, Chicago, IL, USA) and "OpenEpi" (Open Source Epidemiologic Statistics for Public Health) Version 3.01 [27].

Participation in this study was completely voluntary. Informed consent forms (separated from the questionnaire) were electronically signed by each participant and the principal investigator. Study participants had the right to refuse to take part in the study at the beginning, or to withdraw themselves from the study at any time. The participation was anonymous and the data for this study were kept completely confidential. Ethical approval for the study protocol was obtained from the Institutional Review Board (IRB), General Directorate of Health Affairs in Tabuk Region, Saudi Arabia (Approval Number: TU-077/019/005).

Results

A total of 492 healthcare workers responded to and completed the "Google Form." Table 2 presents the background characteristics of 492 healthcare workers in the health sector of Tabuk region, Saudi Arabia. Males (51.0%) and females (49.0%) were almost equally represented in the sample. The majority of the participants were Saudi nationals (89.8%), while only 10.2% were non-Saudi. Most of the participants worked at the primary health care centers and the Tabuk Regional Health Directorate (23.5% and 16.9%, respectively). The most common healthcare worker group was nurses (41.3%),

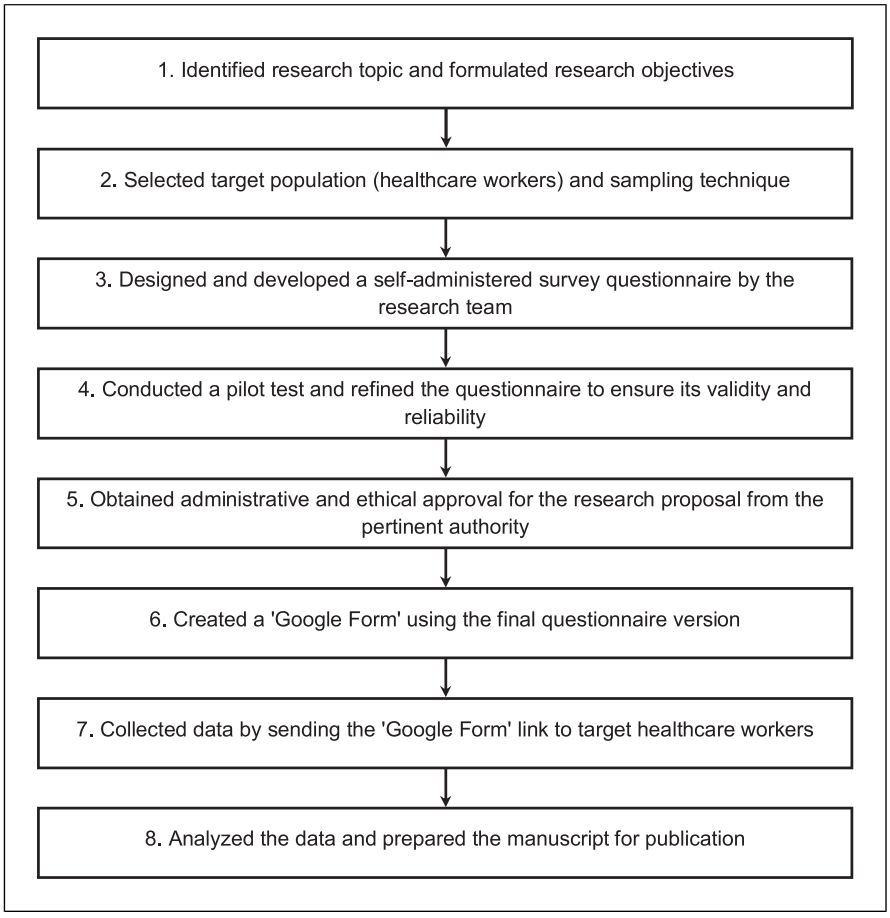

Fig. 1. A flowchart of the research methods applied.

followed by others (25.5%), which included pharmacists, technicians, and allied health professionals. The least prevalent group was physicians (14.0%). The majority (40.8%) of the participants had 6–15 years of work experience, while a few (5.1%) had less than 1 year.

Table 3 shows the awareness of 492 healthcare workers regarding the National Transformation Program in the Health Sector of Tabuk region, Saudi Arabia. All respondents (100%) had heard about the program, mostly through social media (72.4%). The majority of respondents (71.5%) correctly identified the strategic objectives of the program, which include facilitating access to health services, improving the quality and efficiency of health services, promoting health risk prevention, and enhancing traffic safety. About half of the respondents (49.1%) correctly defined the institutional transformation in the health sector as reorganizing the healthcare sector to make it more efficient and effective for the staff and citizens. Similarly, about half of the respondents (49%) appropriately explained the new model of care in the health sector as ensuring that the pathway of the patient is clear in the healthcare system. Job stability was the top concern for most respondents (41.1%) about the National Transformation Program in the health sector. Most of the respondents (89.9%) considered themselves a part of the program and agreed with it (92.2%). Only a few did not feel they were part of the program or did not support it (10.2% and 7.8%, respectively).

Table 4 illustrates the mean scores of respondents' readiness for the transformation process in the health sector in the Tabuk region, Saudi Arabia. Table 4 also reports the 95% confidence intervals and the significance levels of the differences between categories within each variable, using one-way ANOVA. Women showed a significantly higher score (39.3 ± 8.3 points) compared to men (36.8 ± 10.7 points), $p = 0.004$. Physicians showed a higher score (41.5 ± 8.1 points) compared to the administrative personnel (38.2 ± 9.5 points), nurses (37.6 ± 9.2 points), and other healthcare workers (36.9 ± 10.5 points), and these differences were statistically significant ($p = 0.011$). On the other hand, respondents' nationality and years of experience ($p = 0.649$ and $p = 0.097$, respectively) did not significantly affect the readiness scores.

Table 2. Background characteristics of healthcare workers (n = 492) in the health sector, Tabuk region, Saudi Arabia

Background characteristics	Category	n (%)	95% CI
Gender (n = 490)	Male	250 (51.0)	46.6–55.4
	Female	240 (49.0)	44.6–53.4
Nationality (n = 490)	Saudi	440 (89.8)	86.8–92.2
	Non-Saudi	50 (10.2)	7.8–13.2
Workplace (n = 486)	Primary Health Care Center	114 (23.5)	19.9–27.4
	Tabuk Regional Health Directorate	82 (16.9)	13.8–20.5
	King Fahad Specialist Hospital (KFSH)	58 (11.9)	9.3–15.1
	King Khaled Hospital (KKH)	54 (11.1)	8.6–14.2
	Maternity and Child Hospital (MCH)	36 (7.4)	5.4–10.1
	Al-Wajh Hospital	24 (4.9)	3.3–7.2
	Tayma Hospital	24 (4.9)	3.3–7.2
	Umluj Hospital	21 (4.3)	2.8–6.5
	Al-Amal Complex for Mental Health	20 (4.1)	2.7–6.3
	Al-Bada Hospital	20 (4.1)	2.7–6.3
	Haqel Hospital	15 (3.1)	1.9–5.0
	Duba Hospital	10 (2.1)	1.1–3.7
	Ashwag Hospital	5 (1.0)	0.4–2.4
	Abo Raka Hospital	3 (0.6)	0.2–1.8
Healthcare worker group (n = 487)	Physician	68 (14.0)	11.2–17.3
	Nurse	201 (41.3)	37.0–45.7
	Administrative personnel	94 (19.3)	16.0–23.0
	Others*	124 (25.5)	21.8–29.5
Work experience (n = 492)	<1 year	25 (5.1)	3.5–7.4
	1–5 years	170 (34.6)	30.5–38.9
	6–15 years	201 (40.8)	36.6–45.2
	>15 years	96 (19.5)	16.2–23.2

n, number of respondents; %, percentage; CI, confidence interval. *Others included pharmacists, technicians, and allied health professionals.

Discussion

The present study revealed that the awareness of the healthcare workers regarding the National Transformation Program in the health sector was high and positive. This is consistent with the Vision 2030 of Saudi Arabia, which aims to restructure the health sector in Saudi Arabia to be a comprehensive, effective, and integrated health system that is based on the health of the individual and society and depends on the principle of value-based care [10]. The program also focuses on improving access to health services, enhancing the quality and efficiency of health services, promoting health risk prevention, and enhancing traffic safety [4, 10]. These are some of the strategic objectives that the respondents correctly identified in this study.

Our study reported that most respondents correctly identified the strategic objectives of the program, defined the institutional transformation and the new model of care in the health sector, and expressed their support and involvement in the program. However, these findings are higher than those reported by other studies in different regions and countries, which showed lower levels of knowledge and acceptance of health system reforms among healthcare workers [28]. This could indicate a positive effect of the communication and engagement strategies implemented so far by the Saudi Ministry of Health to promote the program among healthcare workers. Moreover, our findings are aligned with several previous studies that highlighted the role of strengthening workforce efficiency and engagement and their readiness for change in facilitating successful healthcare reforms in Saudi Arabia [11, 29–32].

However, a number of the respondents seem to have some confusion or lack of clarity about the institutional transformation process and the new model of care in the

Table 3. Awareness of healthcare workers (*n* = 492) regarding National Transformation Program in the health sector, Tabuk region, Saudi Arabia

Question number	Questions with single select multiple answer options	*n* (%)
Q1	*Did you hear about the National Transformation Program in the health sector? (n = 492)*	
	Yes	492 (100.0)
	No	0 (0.0)
Q2	*Through which media did you hear about the National Transformation Program in the health sector? (n = 467)*	
	Social media (email-Snapchat-Twitter-Facebook)	338 (72.4)
	Workshops with managers and co-workers	44 (9.4)
	TV, radio, newspapers	41 (8.8)
	SMS via WhatsApp application	30 (6.4)
	Transformation Management Office	11 (2.4)
	Ministry of Health website	1 (0.2)
	All of the above	1 (0.2)
	None of the above	1 (0.2)
Q3	*What are the strategic objectives of the National Transformation Program in the health sector?* (*n = 492*)	
	Facilitating access to health services, improving quality and efficiency of health services, promoting health risk prevention, enhancing traffic safety	352 (71.5)
	Support staff development, training and development, professional promotions, job performance evaluation	58 (11.8)
	None of the above	21 (4.3)
	Not sure	61 (12.4)
Q4	*What is the institutional transformation in the health sector?* (*n = 491*)	
	Reorganizing the healthcare sector to make it more efficient and effective for the staff and citizens	241 (49.1)
	Improving citizen access to healthcare services	163 (33.2)
	Rewarding well-performing staff	16 (3.3)
	Supporting staff development	6 (1.2)
	None of the above	12 (2.4)
	Not sure	53 (10.8)
Q5	*What is the new model of care in the health sector?* (*n = 492*)	
	Ensure that the pathway of the patient is clear in the healthcare system	241 (49.0)
	Prevention of disease	128 (26.0)
	Early detection of diseases	49 (10.0)
	None of the above	9 (1.8)
	Not sure	65 (13.2)
Q6	*What is your main consideration about the National Transformation Program in the health sector?* (*n = 487*)	
	Job stability	200 (41.1)
	New salary scale	82 (16.8)
	Training and development	69 (14.2)
	Performance evaluation	62 (12.7)
	Benefits of change in future	49 (10.1)
	Career promotion	14 (2.9)
	Relocation of the workplace	7 (1.4)
	Providing better health services	1 (0.2)
	Actual health benefits for the public interest	1 (0.2)
	All of the above	2 (0.4)
Q7	*Do you consider yourself a part of the National Transformation Program in the health sector?* (*n = 489*)	
	Yes	439 (89.9)
	No	50 (10.2)
Q8	*Do you support the National Transformation Program in the health sector?* (*n = 489*)	
	Yes	451 (92.2)
	No	38 (7.8)

n, number of respondents; %, percentage.

Table 4. Respondents' score* of readiness for transformation process in the health sector, Tabuk region, Saudi Arabia

Variable	Category	Mean (±SD) score	95% CI	Significance (p value**)
Gender	Male	36.8 (±10.7)	35.5–38.1	$p = 0.004$
	Female	39.3 (±8.3)	38.2–40.3	
Nationality	Saudi	37.5 (±8.7)	36.7–38.3	$p = 0.649$
	Non-Saudi	38.1 (±9.9)	35.6–40.6	
Healthcare worker group	Physician	41.5 (±8.1)	39.2–43.8	$p = 0.011$
	Nurse	37.6 (±9.2)	36.3–38.9	
	Administrative personnel	38.2 (±9.5)	36.3–40.1	
	Others***	36.9 (±10.5)	35.2–38.6	
Work experience, years	<1 year	38.1 (±8.2)	34.2–42.0	$p = 0.097$
	1–5 years	39.1 (±8.8)	37.6–40.5	
	6–15 years	37.2 (±10.0)	35.9–38.5	
	>15 years	36.3 (±10.0)	34.4–38.2	

%, percentage; SD, standard deviation; CI, confidence interval. *The questionnaire included 10 questions on readiness for transformation. Answers to each of these questions were given scores from 1 to 5, indicating the level of readiness for transformation with a total score of 50 points. The answer strongly agree was given a score of 5, agree was given 4, neutral was given 3, disagree was given 2 points, and strongly disagree was given one point. **Based on the one-way ANOVA (analysis of variance). ***Others included pharmacists, technicians, and allied health professionals.

health sector. Only about half of them correctly defined or explained these concepts, which are essential for achieving Vision 2030. The institutional transformation refers to reorganizing the healthcare sector to make it more efficient and effective for the staff and citizens [10], while the new model of care relates to ensuring that the pathway of the patient is clear in the healthcare system [10]. These concepts involve changing the roles and responsibilities of different stakeholders in the health sector, such as providers, payers, regulators, and beneficiaries [29]. Therefore, it is important to increase the awareness and understanding of these concepts among healthcare workers as they are key players in implementing and sustaining the transformation.

The present study showed that social media was a major source of information about the National Transformation Program in the health sector for healthcare workers, indicating a need for more effective communication strategies from official channels. Another interesting finding from our study was that job stability was the top concern for most respondents about the National Transformation Program in the health sector. This may indicate some fear or uncertainty about how the transformation will affect their careers or employment opportunities. It may also reflect some resistance or reluctance to change their current practices or routines. Hence, it is important to address these concerns and provide reassurance and support for healthcare workers during the transformation process. It is also essential to highlight the benefits and opportunities that the transformation will bring for them and the entire society.

Our study results presented that most healthcare workers considered themselves a part of the programs and agreed with them, which indicates a high level of acceptance among this group. However, some respondents did not feel involved in or supportive of the program. This could have been caused by various factors, such as a lack of clarity about the health transformation process; perceived lack of transparency about the program and its vision; fear of being replaced by younger employees; or uncertainty that the program would benefit them.

The present study found that women had a significantly higher readiness score than men ($p < 0.05$) and that the mean score of physicians was significantly higher than that of administrative personnel, nurses, and other healthcare workers ($p < 0.05$). These results suggest that gender and occupation are important factors that influence the readiness for the transformation process in the health sector in the Tabuk region, Saudi Arabia. Moreover, these findings are consistent with some of the previous literature on readiness for change in the health sector. For example, a scoping review by Beasley et al. [33] found that gender and occupation were among the factors that influenced individual readiness for change in healthcare settings. Similarly, a study by Helfrich et al. [34] found that change commitment and change efficacy

varied by occupation and gender among employees of small businesses participating in a workplace health promotion trial.

This study has several advantages. First, it assessed the awareness, readiness, and concerns of the participants regarding the National Transformation Program in the health sector, which is a relevant and timely topic for Saudi Arabia. Second, it involved a large and diverse group of healthcare workers, which enhanced the reliability and applicability of the findings. Third, it used a "Google Form," which is a convenient and cost-effective way of collecting data from a diverse and geographically dispersed population. Furthermore, the study applied descriptive statistics and one-way ANOVA to analyze the data, which are appropriate methods for comparing means and proportions among different groups.

However, this cross-sectional study has some limitations. First, it only surveyed healthcare workers in Tabuk region, so it cannot generalize to the whole country. Second, it only provided a snapshot of the situation at the time of the research, so it may not reflect the countrywide state of affairs regarding the awareness and readiness of healthcare workers for the health sector transformation program. Third, it did not include qualitative data to explain the reasons behind the findings.

Our findings recommend that policymakers should continue to use social media and other channels to disseminate information and updates about the program to the public and the healthcare workers. The gender difference in readiness scores suggests that women may be more receptive and adaptable to the transformation process than men. Policymakers should consider the needs and preferences of both genders when designing and implementing the program. The variation in readiness scores among different healthcare worker groups implies that some groups may require more training and guidance than others to cope with the changes brought by the program. Policymakers should identify the specific challenges and opportunities faced by each group and provide tailored support and resources to enhance their skills and confidence in the new model of care.

Our findings also suggest that there is a need for more effective communication and education strategies to increase the awareness and readiness of healthcare staff for the transformation process. To include healthcare professionals in future advancement and improvements, they should be communicated with about the vision and benefits of the change, involved and empowered in the change process, provided with adequate training and support, and addressed for the emotional and psychological aspects of the change. These strategies can help reduce their fear, increase their trust, enhance their skills, and improve their motivation and well-being. Furthermore, addressing the concerns and expectations of different groups of healthcare workers is essential to ensure their engagement and commitment to the program. This way, the program can achieve its goals of improving the access, quality, efficiency, and safety of health services in Saudi Arabia. Given the importance and complexity of the Health Sector Transformation Program in Saudi Arabia, further research is needed to evaluate its progress, challenges, and outcomes.

Statement of Ethics

This study protocol was reviewed and approved by the Institutional Review Board (IRB), General Directorate of Health Affairs in Tabuk Region, Saudi Arabia. The approval number is TU-077/019/005. Participation in this study was completely voluntary. Informed consent forms (separated from the questionnaire) were electronically signed by each participant and the principal investigator. Study participants had the right to refuse to take part in the study at the beginning, or to withdraw themselves from the study at any time. The participation was anonymous and the data for this study were kept completely confidential.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Funding Sources

There was no funding for the study.

Author Contributions

Khulud Ghalibi made substantial contributions to the conception, design, acquisition, analysis, and interpretation of data for this work. She was involved in drafting the manuscript and revising it critically for important intellectual content. Also, she gave the final approval for the version to be published. Hamza Mohammed Ibrahim Omer played a significant role in the collection, analysis, and interpretation of data for this study. He also participated in writing the manuscript and critically reviewing it for important intellectual content. Moreover, he approved the final version to be published. For this study, Mohammad Al Mamun contributed significantly to the data collection, analysis, and interpretation. He also helped write and revise the manuscript for intellectual quality. Furthermore, he gave his approval for the final version to be published. All authors take responsibility for the entire work and make sure that any issues related to the work's accuracy or integrity are properly addressed and resolved.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

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