

# Physicians' Perceptions of Dietitians' Services and Roles in Riyadh, Kingdom of Saudi Arabia

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## Keywords

Physicians · Dietitians · Clinical nutrition · Perception · Roles

## Abstract

**Introduction:** Nutrition is a fundamental part of living a healthy lifestyle and is well-recognized in the prevention and treatment of several illnesses. The physicians' collaboration according to their perception regarding the nutrition services and dietitian roles is important for optimal healthcare management. However, gaps exist in the knowledge and understanding of how the dietitian is perceived by physicians. To the researchers' knowledge, this is the first study to assess the physicians' perceptions regarding the role and services of dietitians in Riyadh city. **Method:** A cross-sectional study was conducted by using an anonymous self-administered online-based survey to investigate physicians' perceptions regarding the role and services of dietitians. In addition to demographics, the questionnaire consisted of 20 statements that covered five domains of the dietitians' scope of practice (Medical Nutrition Therapy, Legislation and Policy, Research and Interventions, Community Programs, and Sports Nutrition). A total of 407 participants were recruited between February and March 2021. Male and female medical physicians with different professional degrees who worked in Riyadh city were eligible to be included in the study. A cross-tabulation test was used to determine the difference

among physicians regarding their perceptions of dietitians' services and roles. **Results:** For all of the 20 statements that demonstrated dietitians' services and roles, the mean score was classified as "strongly agree" with a mean of 4.33 (SD ± 0.541). There was a statistically significant relationship between physicians' perceptions according to their nutritional background and two statements regarding dietitians' clinical roles. In addition, there was also a statistically significant relationship between physicians' perceptions who are not working in academia and three statements regarding dietitians' clinical and nonclinical roles. **Conclusions:** This study's findings support the importance of dietitians' services in the healthcare setting as a multidisciplinary approach and recommend expanding dietitians' employment opportunities outside the healthcare setting. Additionally, this study emphasizes incorporating nutrition education for physicians and demonstrates physicians' understanding of nutrition as a discipline.

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## Introduction

Nutrition is a fundamental part of living a healthy lifestyle. Having an unhealthy diet and being physically inactive are among the identified risk factors for noncommunicable

diseases. It was acknowledged that dietary factors are the main cause of morbidity in the 2019 Global Burden of Disease Study of 195 countries [1]. Additionally, nutrition is well-documented as playing a role in the prevention and treatment of several illnesses [2]. Providing adequate nutritional support to hospitalized patients has also been shown to decrease hospital length of stay and healthcare costs [3].

The importance of nutrition is becoming more evident to healthcare professionals in the care of different medical specialties such as intensivists, gastroenterologists, and surgeons [4]. The nutrition care process requires a holistic and interdisciplinary approach to ensure that nutritional care is valued [5]. Nevertheless, there is a lack of a coordinated approach, including improper interdisciplinary communication and a lack of shared responsibility [5, 6]. There is often a lack of understanding about the dietitians' role among other healthcare practitioners [7]. Moreover, studies showed a disparity in physicians' perceptions regarding dietitians' roles. One study reported disagreement among physicians on the dietitian's autonomy level in the decision-making process within the patients' nutrition care except for the selection of calorie supplements [8]. Another study result showed that physicians perceived dietitians as contributing members of the healthcare team [9]. However, physicians frequently underestimate dietitians' expertise and their potential contribution to improving patient outcomes [10]. This is often in the case of clinical practice, as it was reported that physicians implement dietitian recommendations in only (42%) of cases [9]. Additionally, in the specific area of enteral feeding nutritional intervention, a comparable physicians compliance rate of the dietitian recommendations (40%) have reported, as well patients were made nil per os (NPO) or placed on a clear liquid diet for a prolonged period of time according to physician order, almost with inappropriate and poorly justified reasons which may deliver malnutrition [11].

The physicians' collaboration according to their perception regarding the nutrition services and dietitian roles is important for optimal healthcare management. Physician in the clinical setting influences the nutritional treatment plan by supervising the care plan and documentation to ensure the medical care plan's orientations and compensation for services [5, 12]. However, optimal nutrition care requires qualified dietitians [5, 12]. Therefore, interdisciplinary collaboration and coordination with clear roles and responsibilities are crucial in ensuring optimal patient care.

In Saudi Arabia, there is no well-established source for the delineated roles and competencies of the accredited dietitian. On the other hand, international bodies have clearly outlined the professional standards for dietitians' roles and domains of practice which would contribute to improving the recognition of dietitian competencies and services [13–15]. However, identifying physicians' perceptions of dietitian roles is a starting point to understand the specific collaboration between physicians and dietitians. Understanding any possible gaps will determine the need for raising awareness about the clinical nutrition field. Filling these gaps will enhance the value of nutritional practices by dietitians. This consequently could improve the quality and efficiency of health services, which represents a key objective of the Ministry of Health transformation program in Saudi Arabia [16]. To the researchers' knowledge, this is the first study to assess the physicians' perceptions regarding the role and services of dietitians in Riyadh city.

## Materials and Methods

This is a cross-sectional study conducted in Riyadh City. It was composed of an anonymous self-administered online-based survey, which was distributed to physicians via social media platforms. A number of hospitals also sent the survey through the employees portal (i.e., two tertiary hospitals and one secondary hospital) as they represent the main hospitals in Riyadh's first and second health clusters. Additionally, a pamphlet that displayed a barcode of the survey link was given to the physicians in various health institutes. The online questionnaire had the feature of limiting the responses to only one per IP address. The questionnaire consisted of two sections (Refer to the online suppl. material at [www.karger.com/doi/10.1159/000528453](http://www.karger.com/doi/10.1159/000528453)). The first section covered the respondents' demographic and personal characteristics, including age, sex, nationality, personal health problems related to nutrition, educational level, country of the highest degree, type of work facility, professional status, specialization, previous training/education in clinical nutrition, years of practice, and the presence of academic work beside clinical practice. Thus, this questionnaire was able to discriminate physicians' perceptions within respondent characteristics. The second section addressed the physician's perception of the clinical dietitian's services and roles. A five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) was used. The response scores for each statement are represented as the mean (standard deviation) and categorized as strongly disagree (1–1.80 points), disagree (1.81–2.60 points), neutral (2.61–3.40 points), agree (3.41–4.20 points), and strongly agree (4.21–5 points).

For validation purposes, dietitian role statements and domains were acquired from the unified Saudi classification for educational levels and specializations [17]. It also used international body sources involving the scope of practice for the registered dietitian established by the Academy of Nutrition and Dietetics [13], the national professional standards for dietitians practicing in health-

**Table 1.** Sample demographics and personal characteristics (*n* = 407)

Variables	Count (%)	Variables	Count (%)
Gender		Type of Work Facility	
Male	289 (71)	Governmental Hospitals	373 (91.6)
Female	118 (29)	Private Hospitals	19 (4.7)
Nationality		Primary Healthcare Centers	9 (2.2)
Saudi	353 (86.7)	Private Clinics/Centers	6 (1.5)
Non-Saudi	54 (13.3)	Professional Status	
Age		Medical Intern	62 (15.2)
≤25 years old	59 (14.5)	Resident	178 (43.7)
26–35 years old	252 (61.9)	Specialist/Registrar	46 (11.3)
36–45 years old	65 (16.0)	Senior Registrar/Assistant Consultant/Associate	
46–55 years old	19 (4.7)	Consultant	45 (11.1)
56–60 years old	6 (1.5)	Consultant	76 (18.7)
≥61 years old	6 (1.5)	Working in Academia	
Personal Health Problems Related to Nutrition		Yes	165 (40.5)
Without Health Problem	227 (55.8)	No	242 (59.5)
With Health Problem <sup>a</sup>	180 (44.2)	Years of Practice	
Country of Highest Degree		≤2 years	147 (36.1)
Inside Saudi Arabia	314 (77.1)	3–5 years	122 (30.0)
Outside Saudi Arabia <sup>b</sup>	93 (22.9)	6–10 years	61 (15.0)
Specializations		11–20 years	57 (14.0)
Internal Medicine	135 (33.2)	21–30 years	14 (3.4)
Surgery	41 (10.1)	≥31 years	6 (1.5)
Pediatrics	32 (7.9)	Received Nutritional Training <sup>c</sup>	
Intensive Care	73 (17.9)	Yes	184 (45.2)
Family Medicine	42 (10.3)	No	223 (54.8)
Obstetrics and Gynecology	15 (3.7)		
Orthopedic	6 (1.5)		
Otolaryngology	4 (1.0)		
Emergency Medicine	14 (3.4)		
Still during Internship	20 (4.9)		
Others	25 (6.14)		

<sup>a</sup> Overweight/obesity, cardiovascular disease (e.g., hypertension, hyperlipidemia). Endocrine disease (e.g., diabetes mellitus), gastrointestinal disease (e.g., inflammatory bowel syndrome, celiac disease), and others. <sup>b</sup> Canada, USA, UK, Germany, Egypt, Sudan, and others. <sup>c</sup> Courses, conferences, or concepts integrated into other courses.

care by the British Dietetic Association [18], and role statements for accredited practicing dietitians determined by the Dietitians Association of Australia [14]. The researchers adopted all domains and competencies that are similar across the three international body sources. The content validity index was calculated based on the agreement between 2 qualified expert researchers in the field of clinical nutrition. These researchers were not involved in the development of the questionnaire's statements.

Thereafter, the designed questionnaire was pretested by a few physicians for face validity. Subsequently, the questionnaire was revised based on perceived feedback and recommendations. As a result, the final survey comprised two sections, including 11 questions and 20 statements with an average of 5–10 min required to complete.

According to the data obtained from the statistical yearbook by the Statistics and Information General Department, Ministry of Health (MOH) 2020, a total of approximately 8,601 physicians are working in Riyadh Region. Accordingly, to find out the number of physicians who are working in Riyadh city, we assumed that half of them were in Riyadh city as no obvious statistic was found. Thus, based on the total population of physicians in Riyadh city, we aimed to reach an effective sample of *n* = 356 participants with

a 95% confidence interval, 5% as a margin of error, and a design effect of 1. This sample size was calculated by using the online Epi Info™ sample size calculator (Division of Health Informatics & Surveillance (DHIS), Center for Surveillance, Epidemiology & Laboratory Services (CSELS), Georgia, USA) [19].

The study included both male and female medical physicians: consultants, registrars, specialists, residents, and medical interns who actively work in Riyadh. The exclusion criteria were medical students who had not yet graduated, other healthcare providers (i.e., nurses, pharmacists, clinical laboratories specialists, speech-language pathologists, physical therapists, radiologists, health educators, clinical dietitians, and respiratory therapists), and any physicians not working in Riyadh city.

The statistical analysis was conducted using IBM SPSS Statistics (Version 25; IBM Corp., Armonk, NY, USA). Descriptive statistics results are shown as a mean and standard deviation to explore and describe the continuous data characteristics, whereas frequencies and percentages are used for categorical data characteristics. A cross-tabulation test was used to determine the difference among physicians regarding their perceptions of dietitians' services and roles. A *p* value of <0.05 was denoted as statistically significant.

**Table 2.** Description of physicians' perceptions of dietitians services and roles (n = 407)

Domains	Statements	Mean (SD) <sup>a,b</sup>
Medical Nutrition Therapy (MNT)	Dietitian services are a necessity, not a luxury	4.56 (0.727)
	Dietitian notes in medical files should be considered during the diagnostic process	4.13 (0.953)
	Dietitian nutritional plans should be followed during the therapeutic process	4.46 (0.754)
	Any patient with diet-related diseases should be referred to a dietitian	4.60 (0.762)
	For outpatient services, appointments for dietitian clinics should be booked without a physician's referral	3.83 (1.124)
	Dietitians have a role in managing nutritional needs pre- and post-surgery	4.42 (0.805)
	Dietitians should be part of the medical team in intensive care units for enteral nutrition	4.48 (0.836)
	Dietitians should be part of the medical team in intensive care units for parental nutrition	4.47 (0.861)
	Dietitian services play a major role in preventing malnutrition inside and outside hospitals	4.43 (0.766)
	Nutritional supplements should be prescribed by dietitians	3.97 (1.009)
	Nutritional formulas should be prescribed by dietitians	4.14 (0.969)
	Private diet centers/Clinics should be supervised and managed by a dietitian	4.34 (0.865)
	Dietitians have a role in preventive healthcare services	4.57 (0.708)
Legislation and Policy	Dietitian services should be covered by health insurance	4.47 (0.708)
	Dietitians should be involved in the legislation of policies related to food and nutrition	4.26 (0.785)
Research and Interventions	Dietitians should take the lead in conducting clinical trials related to food and nutrition	4.15 (0.887)
	Dietitians are primarily responsible for nutritional assessment and intervention	4.40 (0.787)
Community Programs	Dietitians should be involved in the design of programs and initiatives related to food and nutrition	4.32 (0.717)
	Dietitians should be a part of medical humanitarian aid teams	4.16 (0.847)
Sport Nutrition	Dietitians play a role in enhancing athletic performance by managing athletes' nutrition	4.41 (0.775)

<sup>a</sup> Standard deviation. <sup>b</sup> Strongly disagree (1–1.80), disagree (1.81–2.60), neutral (2.61–3.40), agree (3.41–4.20), and strongly agree (4.21–5).

**Table 3.** Results of cross-tabulation of physicians' perceptions with working in academia (n = 407)

Working in academia	Dietitians are primarily responsible for nutrition assessment and intervention				Fisher's exact test	p value	Dietitians should be part of the medical team in intensive care units for parental nutrition				Fisher's exact test	p value		
	SA, (%)	A, (%)	N, (%)	D, (%)			SD, (%)	SA, (%)	A, (%)	N, (%)			D, (%)	SD, (%)
No	130 (32)	81 (20)	28 (6.9)	3 (0.7)	0 (0)	18.194	0.001	153 (37.6)	57 (14)	23 (5.6)	9 (2.2)	0 (0)	9.293	0.047
Yes	92 (22.6)	60 (14.7)	4 (1)	6 (1.4)	3 (0.7)			110 (27)	36 (9)	11 (2.7)	3 (0.7)	5 (1.2)		

SA, Strongly Agree; A, Agree; N, Neutral; D, Disagree; SD, Strongly Disagree.

**Table 4.** Results of cross-tabulation of physicians' perceptions with nutritional background (*n* = 407)

Received nutrition training	For outpatient services, appointments for dietitian clinics should be booked without a physician's referral					Fisher's exact test	<i>p</i> value	Nutritional supplements should be prescribed by dietitians					Fisher's exact test	<i>p</i> value
	SA, (%)	A, (%)	N, (%)	D, (%)	SD, (%)			SA, (%)	A, (%)	N, (%)	D, (%)	SD, (%)		
	No	92 (22.6)	55 (13.5)	46 (11.3)	28 (7)			2 (0.5)	97 (23.8)	69 (17)	43 (10.6)	9 (2.2)		
Yes	56 (13.8)	54 (13.3)	45 (11)	21 (5)	8 (2)	54 (13.3)	63 (15.5)	48 (11.8)	16 (3.9)	3 (0.7)				

SA, Strongly Agree; A, Agree; N, Neutral; D, Disagree; SD, Strongly Disagree.

## Results

The online questionnaire reached 543 participants, and 456 complete responses were submitted. A total of 87 participants (71 working outside Riyadh and 16 health practitioners other than physicians) were excluded from the study. As a result, a total of 407 eligible participants were included in the study. Of the reached physicians, the majority responded, giving a 75% response rate (*n* = 407). The study sample demographics and personal characteristics are illustrated in Table 1. Most of the participants were Saudi (*n* = 353; 86.7%), male (*n* = 289; 71%), aged between 26 and 35 years old (*n* = 252; 61.9%), and without any personal health problems related to nutrition (*n* = 227; 55.8%). The most frequent characteristics among physicians in regards to education and professional status were: the highest degree earned inside Saudi Arabia (*n* = 314; 77.1%), with a medical specialty in the area of internal medicine (*n* = 135; 33.2%), working in a governmental hospital (*n* = 135; 33.2%) and a professional classification of resident (*n* = 178; 43.7%), not working in academia besides clinical practice (*n* = 242; 59.5%), practiced ≤2 years (*n* = 147; 36.1%), and did not receive any nutritional training/education in clinical nutrition (*n* = 223; 54.8%).

The description of physicians' perceptions regarding dietitians' services and roles for each domain and statement are shown in Table 2. The mean values for all five domains ranged within the classification of "strongly agree." Their values were the following: 4.34 (SD ± 0.856) for Medical Nutrition Therapy Domain, 4.36 (SD ± 0.746) for Legislation and Policy Domain, 4.27 (SD ± 0.837) for Research and Interventions Domain, 4.24 (SD ± 0.782) for Community Programs Domain, and 4.41 (SD ± 0.775) for Sports Nutrition Domain.

According to the cross-tabulation test results, there was a statistically significant relationship between physicians' perceptions of who was working in academia and the two statements (shown in Table 3). One statement was in the Research and Intervention Domain (Fisher's exact Test [*N* = 407] = 18.194, *p* = 0.001), and the other statement was in the Medical Nutrition Therapy Domain (Fisher's exact test [*N* = 407] = 9.293, *p* = 0.047). In addition, there was also a statistically significant relationship between physicians' perceptions of a nutritional background and the two statements (shown in Table 4). Both statements were in Medical Nutrition Therapy (Fisher's exact test [*N* = 407] = 9.609, *p* = 0.045), and (Fisher's exact test [*N* = 407] = 11.625, *p* = 0.019).

## Conclusion

This study assessed physicians' perceptions regarding dietitian services and roles. Our study results showed that physicians hold a positive view of perception regarding the dietitians' roles within the clinical practices and beyond (shown in Table 2). Concurring with previous studies, physicians agreed that nutrition service is a necessity and a significant part of healthcare [20, 21]. Physicians further recommended that nutrition should be covered by health insurance. They also agreed on dietitians' role in preventive healthcare services. Additionally, they emphasized on the consideration of dietitian notes and nutritional plans during the therapeutic process. The agreement among participants regarding dietitians' roles and nutrition services reflects their understanding of nutrition as a discipline and dietitians' role in healthcare.

Physicians have concurred on the referral to the dietitian for any patient with diet-related diseases. Dietary counselling is strongly recommended for all patients with nutrition-related diseases as well as with or at risk of health-nutrition problems [22, 23]. For instance, malnutrition which is debilitating and highly prevalent conditions among hospitalized patients [24]. It is associated with prolonged hospital stays, increased morbidity, mortality, clinical complications, and healthcare costs [25, 26]. Recognizing the importance of dietitian referral at an early point of malnutrition identification could be associated with reducing or preventing malnutrition-associated poor outcomes [5]. Additionally, the existing literature clearly showed considerable benefits of dietitian involvement in patients' care plans, resulting in improved health outcomes and quality of life [27–29]. Nevertheless, this is often not in the case of clinical practice, a low dietitian referral rate among patients has been reported [30]. Thus, since the referral is conducted solely by physicians in most countries, their perception must be accompanied by sufficient training that improves their ability to recognize the patients' need for dietary intervention. Also, a protocol that regulates identifying patients at nutritional risk must be applied.

Physicians' agreement has revealed on the dietitian's major role in managing patient nutritional needs pre- and post-surgery. In fact, dietitians act as effective members to facilitate early recovery after surgical procedures by optimizing the patient nutritional status pre- and post-surgery [31]. Physicians further agreed on the dietitians' prescription of nutritional formulas. Nutrition-

al formulas are a relatively low-risk intervention that positively impacts health outcomes [32–34]. Interestingly, it was reported that prescribing nutrition formulas was most effective when combined with dietary counselling [28]. Also, dietitians were supported by physicians to earn the privilege of prescribing nutritional supplements. This is consistent with what has been called by the American Academy of Nutrition and Dietetics, to position the dietitian as the first source of information on nutrient supplementation [35].

Furthermore, physicians have agreed on the clinical dietitian involvement in the medical team of the intensive care unit for enteral nutrition (EN) and parenteral nutrition. The most current standards of practice outline the level of professional expertise required for nutrition support clinicians [36]. Essential aspects include addressing the anthropometrics, nutrient needs, EN tolerance, biochemical data, and other indicators that are all within the dietitian competencies [37]. Thus for successful nutrition intervention, it is crucial to communicate and implement the dietitian EN recommendations. This may impact the outcomes in terms of improved nutrition status markers, weight gain, and reduced length of hospital stay [38, 39]. Moreover, accepting the dietitian recommendations that are based on feeding protocols has improved GI tolerance, calorie delivery, and total volume of EN [38]. The involvement of a dietitian further in the nutrition support team showed to reduce the rates of inappropriate parenteral nutrition use [40].

In our findings, physicians were supportive of the dietitians' roles and services to be applied within various scopes of practices, including sports nutrition, legislation and policy, community programs, as well as research and intervention (shown in Table 2). This is aligned with the roles highlighted by international bodies that recognize the importance of nutrition services in areas beyond clinical settings and acknowledge the dietetics profession competencies to be utilized in diverse areas [8, 9, 41].

Interestingly, it was reported that physicians with only clinical practice (59.5%) had significantly better perceptions regarding dietitians' medical and research roles in comparison to physicians in academia. For example, they perceived that dietitians are primarily responsible for nutrition assessment and intervention. They also agreed on the dietitians' contribution to the medical team in the intensive care unit. The engagement in clinical practice reflects the real-world setting rather than theory, which may explain the difference in

perceptions among physicians. The inadequate nutrition training during medical school can further explain the finding.

Slightly more than half of the physicians (54.8%) reported that they did not receive training in the form of courses, conferences, or concepts integrated into other courses. However, physicians were not asked whether they viewed the training to be adequate. Other studies found that only 29% of medical students had adequate nutrition training [42] and 79% felt that they had not received adequate instruction in nutrition [43]. This demonstrates that nutrition is poorly integrated into the medical curriculum. It was also found that physicians without nutrition training (54.8%) significantly agreed on dietitians prescribing nutritional supplements, as well as appointment booking for diet clinics without the physicians' referral, in comparison to their counterparts without training. This may be due to a lack of confidence by physicians handling cases that require nutritional care. This is supported by the existing literature, which recommends integrating nutrition into medical education [21, 44, 45]. The poor integration of nutrition into medical education is a universal problem. Training should be included throughout the medical years. Nutrition courses should be regularly updated. Access to online nutrition courses should be accessible to all medical students and physicians.

Several limitations of the study are noted. The study included physicians from Riyadh city only, limiting the generalizability of findings. More details about the nutrition training the physicians had undergone would have provided a better understanding as to whether it was adequate. It would also allow comparisons against multiple variables. Qualitative tools like interviews allow for more insight into their description of training and perceptions of dietitians' roles and services. Despite these limitations, the questionnaire statements were derived from national and international bodies and were pretested with a 0.9 content validity index overall. Therefore, the questionnaire can be replicable in other studies as well as other medical professionals. In addition, this is the first study to assess the physicians' perceptions of the role and services of clinical dietitians in Saudi Arabia.

This study's findings support the importance of dietitian services in the healthcare setting as a multidisciplinary approach, which is crucial in maintaining quality care for patients. Expanding employment opportunities for dietitians outside the healthcare setting is recommended, as their role aids in promoting health for

the public. In addition, this study also supports the importance of incorporating nutrition education for physicians and demonstrates physicians' understanding of nutrition as a discipline. Despite this, nutrition education remains poor. A call for action is warranted to enhance the quality of nutrition training among medical professionals. Research is needed to identify the most effective approach to embedding nutrition in medical training.

### Statement of Ethics

The study was conducted according to the guidelines of the Declaration of Helsinki, and the study protocol was reviewed and approved by Institutional Review Board Committee of the Deanship of Scientific Research (or Ethics Committee) of King Saud University (protocol code E20-5,458 at December 7, 2020). Written informed consent for online questionnaire-based survey was obtained from all subjects involved in the study.

### Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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### Author Contributions

Conception and design: Alhanouf S Alsamani and Khalid Aldubayan. Designing of the questionnaire: Alhanouf S Alsamani, Khalid Aldubayan, Yara Almuhtadi, and Alanoud Aladel. Collection and assembly of data: Alhanouf S Alsamani. Analysis and interpretation of the data: Alhanouf S Alsamani and Khalid Aldubayan. Drafting of the article: Alhanouf S Alsamani, Khalid Aldubayan, and Yara Almuhtadi. Critical revision of the article for important intellectual content: Khalid Aldubayan, Alhanouf S Alsamani, Yara Almuhtadi, and Alanoud Aladel. Final approval of the article: Alhanouf S Alsamani, Khalid Aldubayan, Yara Almuhtadi, and Alanoud Aladel.

### Data Availability Statement

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

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